



Nova School of Business and Economics

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**The role of objects in creative collaborations**

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by

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to my parents

Carola and Hermann Bauer

for love and freedom

## **Abstract of the thesis**

Objects matter when professionals collaborate to create new products. Chapter 1 explains the intention of this work, to apply theories on objects in the empirical context of fashion design. Chapter 2 addresses the question of how creative professionals learn about and use strategy tools to turn their artistic fame into a commercial success. For Chapter 3 I collected ethnographic data on the development of a seasonal collection from the idea to the presentation at Fashion Week. The result is a deep insight into the collaborative processes and material objects used when a stable team of designers works with several outside experts. Chapter 4 applies the knowledge of the role of objects in fashion design gained during the ethnography in the context of online co-creation and crowd sourced fashion items. The synthesis of the empirical studies allows me to present the conceptual leap in Chapter 5. In the theoretical essay I review the findings on the role of objects in collaborations in relation to practice theory, present the new concept of the comprehensive object and conclude by stating the possibilities for future research.

**Keywords:** sociomateriality, boundary objects, epistemic objects, collaboration

## Dedication

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## **1. Introduction**

### **The motivation**

Organizations frequently face situations in which people from different occupations have to work together. Not only do collaborators have different professional backgrounds, often they also pursue different strategic goals. These have to be coordinated to achieve the outcome desired by the stakeholders. Coordination can occur successfully when people are given the tools that allow them to communicate, i.e. share their knowledge. In many cases these ‘tools’ not only consist of language but physical objects. The field of organization studies “has traditionally overlooked the ways in which organizing is bound up with the material forms and spaces through which humans act and interact” (Orlikowski 2007, p. 1435). The theoretical challenge of this research is to show how ‘matter matters’, referring to Barad (2003, p. 801): “Language matters. Discourse matters. Culture matters. But there is an important sense in which the only thing that does not seem to matter anymore is matter.” This thesis proposes to analyze the role of objects or material artifacts when they are created and used for the purpose of facilitating collaboration at occupational, organizational, functional, and geographical boundaries. The studies are carried out in a creative domain to add to the research agenda of exploring “the active role of materiality in relation to practical creativity” (Gherardi and Perrotta 2013, p. 230).

### **An explanation of the project**

The approach of this research is to collect data on collaborative product development in fashion design, at the interface of industry and the arts, where creative professionals and managers coordinate the activities and needs of designers, suppliers, re-sellers, outside experts, and customers. This particular setting allows me to observe the final product – a fashion collection

– as well as the stages of its development in material form. In this point it differs from previous studies on organizational communication which focus on products of information systems. Specifically, the papers address the gap of objects in collaborations with a creative assignment. The people in the cases encounter different challenges in the product development process: making and implementing strategy tools to build a designer brand, collaborating with experts to put a seasonal fashion collection into a runway show, and including a worldwide online community in crowd-sourced fashion design.

I used ethnographic case studies to follow objects and their (changing) roles in the collaboration of professionals in the fashion industry. Organizations of this kind require effective and precise communication between professionals of different occupational backgrounds to meet the high international standards of the industry. Creative professionals fulfill the functions of managers in coordinating the preparation and implementation of processes in which objects play key roles as intermediary and final products. The researcher gathers empirical data on the objects, their use and their effectiveness at enabling knowledge sharing amongst designers, within-team and outside collaborators, and the public. The study provides insight on how objects can facilitate coordination in a multi-disciplinary environment. The research shows which objects are used in cross-boundary collaboration, and how effective different object categories are at allowing participants to communicate. The study emphasizes the role of objects in the setting of a highly visually oriented organization, by giving a detailed account of these objects' production, use and effectiveness. The knowledge derived from this case can then be theorized and generalized to be applicable to other fields of management. The study aims to be very detailed about what objects are most effective for what purpose, and to deliver a reliable and generalizable account of the use of infrastructure, boundary objects, and epistemic objects in the creation process, but also the diffusion process.

## **The gap in the literature**

The studies address the issue of ‘making matter matter’ (Barad 2003) by bridging the gap between sociological and management research directed at the role of objects in communication and coordination. My interest in the role of objects in collaborative product development stems from the gap in the literature that the thesis allows me to address, namely the lack of empirical papers applying theories on objects in combination with strategy tools, teaming, and online communities generally and, specifically, an empirical testing of Nicolini et al.’s (2012) comprehensive framework. Whereas cross-boundary collaboration has been observed and documented in areas like science, management and engineering, in institutions and industries (Star and Griesemer 1989, Carlile 2002), my study, situated in a fashion design context, will add a new dimension by showing the practice of a highly dynamic, artistic, and material-oriented environment.

The proposed work builds on a sociological paper on boundary objects (Star and Griesemer, 1989) and the current management literature that has applied this concept to the study of communication and coordination (Carlile 2002, 2004; Bechky, 2003). I enrich the objects literature by adding infrastructure and epistemic things to the concept of boundary objects. In doing this I apply a framework established by Nicolini et al. (2012) that addresses the theoretical roles of objects. Nicolini et al. (2012) unite pre-existing theories on objects (Orlikowski and Scott 2008, Star and Griesemer 1989, Carlile 2002, Rheinberger 1997, Knorr Cetina 1997, Miettinen and Virkkunen 2005) in a theoretical framework that categorizes objects in a hierarchy. Infrastructural objects are at the base of the hierarchy: these are the mundane objects of everyday life that are needed as input materials for collaborating. Boundary objects are located in the middle: these are things that allow people to communicate across boundaries, whether they are occupational, functional, hierarchical, geographical or even temporal.

Epistemic objects build the top of the hierarchy: they are defined as things that do not yet exist. Their lack of being motivates people to collaborate and create the object that can meet the specifications. To my knowledge, the research that constitutes this thesis is the first empirical application of the framework of these three theoretical categories of objects.

### **Theoretical contribution**

Each paper in this thesis makes a unique contribution to the literature. The first paper shows that the objectives of collaborators do not have to be the same for all members of a team to achieve a set goal. On the contrary, team members set out to achieve individual objectives with little overlap but in the end contribute towards the common goal. The second paper identifies teaming processes that occur when experts are drawn in to contribute expertise on a short term, ad-hoc basis and demonstrates how objects reduce the need for coordination in this process. The third paper addresses the new topics of online communities, crowdsourcing, and the established topic of identity that gains a new meaning in computer mediated interaction and face-to-screen communication. The objects identified in the literature, namely infrastructure, boundary objects, and epistemic objects carry different degrees of importance in each phase and in each topic, but we can say that they are equally important for collaborations to be successful. The fourth paper is a theoretical essay on the three empirical papers: it reviews their overall contributions and adds the concept of a comprehensive object that incorporates the properties of all object categories. Although objects clearly fulfill different functions for different people at different times and places, they always can be made to work together and thus constitute the “physical” realm amongst immaterial language, goals, and people.

The thesis is structured as follows: After this introductory chapter, there are three empirical papers on the role of objects in creative collaborations, followed by a theoretical paper on the

role of objects in collaborative practices. The first paper introduces the reader to the main field site, the fashion brand *Os Burgueses*. The study analyzes how creative professionals and strategy beginners make use of and implement strategy tools. The second paper constitutes the core of the thesis: it looks in detail at the role of objects when a stable team collaborates with outside experts to develop and stage a fashion collection. The third paper addresses the question of the role of objects and identity in crowd sourced fashion design. The concluding paper is a theoretical essay that draws on the insights from the three empirical papers to review what the thesis contributes overall.

## **2. How do creative professionals use strategy tools? Analyzing the role of objects in strategy making and implementing**

### **Abstract**

Strategy tool use and sociomateriality have become essential elements in strategy as practice research. We draw on a nine-month ethnography at a fashion design brand to find out how creative professionals use traditional strategy tools to make and implement strategy. Our findings indicate that strategists need to overcome the duality between theory and practice, strategy making and implementing, and strategy tools and work objects, to reach their objectives. We contribute a model that shows how strategy tools and work objects correspond to a framework of a hierarchy of objects, consisting of infrastructure, boundary objects, and epistemic objects. The model facilitates integrated strategy making and implementing by enabling dynamic exchanges between theoretical object categories, strategy tools, and work objects. Defining infrastructural needs, communicating across boundaries, and collaborating towards a desired object(ive) then becomes inherent in professionals' work practices.

**Keywords:** strategy as practice, strategy tools, boundary objects, sociomateriality

## INTRODUCTION

Tools have become prominent and essential elements for the analysis of the strategy process (Jarzabkowski et al. 2013). The idea is that people strategize using material things as tools, creating what Molotch (2003) calls ‘stuff’ – the result of the “continuous mutual stroking between object and action that makes a thing ‘interactively stabilized’” (Pickering 1995, p. 17). When a thing is interactively stabilized then it can “sustain social practices just as those practices sustain them” (Molotch 2003, p. 2). The focus in this paper is on interactively stabilized things that sustain social practices which, in turn are sustained by these practices, that function as tools. When these tools are used strategically by organizations as a means to project imaginaries into the future they can be referred to as ‘strategy tools’.

According to Spee and Jarzabkowski (2009, p. 223) “we need to know much more about how these [strategy] tools are used and for what purposes.” In this paper we pursue the question of how fashion designers without formal management training approach strategy work in general and strategy tool use in particular, to respond to the strategy as practice research agenda and provide how insights gained from applying strategy tools can be translated into strategic performance. Given the importance of temporality and seasonal shows for fashion (Simmel 1957, ten Bos 2000), such strategy work is of crucial importance. Each season a new look is expected and it has to be planned and prepared months in advance. However, the skill of the designer typically resides in working with concepts, fabrics, cutting and the material tools used in making up clothes rather than, for most designers, in the more esoteric fields of strategy. It is rather difficult to manage a business while being creative because the creative element is the source of excitement and innovation in the work whereas management can be a source of pressure and anxiety. Nonetheless, the unfamiliarity of creative professionals with management practices means that in developing their strategy tools they are able to develop an open, fresh, and creative approach that can benefit students and practitioners of strategy tools.

Orlikowski (2002) asks for empirical research in sociomateriality because the “work performed by objects becomes apparent only when we focus on how experts from various disciplines collaborate *in practice*” (Nicolini et al. 2012, p. 612, italics in original). Therefore we look at the collaborative strategic practices in our case, focusing on the role of objects because Spee and Jarzabkowski (2009, p. 230) state that “future empirical research might frame strategy tools conceptually as boundary objects in order to analyze how they [strategy tools] are used in practice.” Jarzabkowski et al. (2013) add to this an analysis of the role of epistemic objects as strategizing artifacts; however, we extend this outlook by building on Nicolini et al.’s (2012) framework of a hierarchy of objects that combine the theoretical concepts of sociomateriality, boundary objects, and epistemic objects. Using this approach helps us to understand the role that objects can have in the implementation of strategy tools when they act as objects that provide infrastructure, facilitate communication and drive the collaboration of experts.

We use the results from an ethnographic case study of a fashion design brand to respond to the following research question: How can the approach of creative professionals and a comprehensive view of objects help the users of strategy tools to formulate and implement strategy? The paper shows how knowledge about the capacity of objects, combined with a creative approach, can trigger a dynamic process in order to reach the objectives that strategists define in their strategy tools.

The paper is organized as follows: First we review the literature on strategy as practice and sociomateriality, and outline the gap in knowledge, namely the lack of empirical studies on how non-managers make and implement strategy using tools, applying recent research on the roles of objects in collaborations. Second, we describe our case and the ethnographic method used. Third, the results show how creative strategy beginners learn about strategy tools, how they use them to make a strategy plan and how they go about implementing them. Fourth, we describe



the conflicts between theory and practice that we encountered in the case and contribute a three-dimensional model that integrates strategy tools, work objects, and theoretical object categories.

## **STRATEGY IN A MATERIAL WORLD**

It is now common for research in strategy to draw on practice theory: “A growing community of organizational scholars studying strategy has begun to use practice theory to understand the relational and enacted nature of strategizing” (Feldman and Orlikowski 2011, p. 1243; Whittington 1992, 2006; Johnson et al. 2003, 2007; Jarzabkowski 2005, 2008; Golsorkhi et al. 2010). We therefore locate our study of objects in strategy work in the wider field of practice theory. By combining the research fields of sociomateriality and strategy as practice we articulate phenomena pertaining in an integrated way to the domain of process thinking such as movement, activity, events, change and temporal evolution (Langley 2007). However, we adopt a practice perspective and emphasize the role of material things because as Tsoukas (2010, p. 47) states, “process research has focused too strongly on managerial agency at the expense of other actors.”

### **Strategy tools as objects-in-use for strategic practice**

Taking a strategy as practice approach means that we look at what people *do* when carrying out strategy work, rather than looking at the strategy an organization *has* (Jarzabkowski et al. 2007). Our focus lies on the micro-actions of the human activity of “strategizing” (Whittington 2006). Specifically, we study the use of things in strategizing, e.g. actors’ engagement with various strategy-making technologies such as plans (Giraudeau 2008), and strategy tools (Spee and Jarzabkowski 2009). Managers draw upon such tools to deal with the uncertainty and ambiguity involved in making strategy here and now for a there and then oriented to some points in the future (Astley and Zammuto 1992). Clark (1997, p. 417) defines strategy tools in terms of the

“numerous techniques, tools, methods, models, frameworks, approaches and methodologies which are available to support decision making within strategic management.” In other words, these are the frameworks typically taught in strategy, including Porter’s five forces (Mazza and Alvarez 2000, Porter 1980), the BCG growth-share matrix (Henderson 1979) or SWOT analyses. Jarzabkowski and Wilson (2006) endorse the idea that strategy tools are simplified artifacts that are presented to practitioners after their theoretical content has been reduced. Although these tools are routinely taught in business school courses, we “know little about how these tools are deployed inside organizations in the day to day practices of managers making strategy” (Kaplan and Jarzabkowski 2006, p. 8; Whittington 2006), a gap in knowledge that an empirical paper such as this address.

Attention has recently shifted, somewhat late in the piece in organization strategy studies (Carter et al. 2008), “to what actually happens when individuals use strategy tools, rather than simply assuming their usage” (Spee and Jarzabkowski 2009, p. 223). Wright et al. (2013) state that what users want is to be able to apply tools that help them to understand and break down complex issues and guide their thinking. Their provenance is immaterial. According to Spee and Jarzabkowski (2009, p. 228) “the most relevant performance evaluation of a strategy tool [...] is in the context of its immediate use and the way that it enables necessary social interactions.” The latter point supports our initial decision to follow the stuff of strategy tools in practice (Vaara and Whittington 2012). Antonacopoulou and Balogun (2010) ask for strategy research to refocus on practice and be attentive to the micro-dynamics of strategizing, a point that we address in our empirical case. Strategy studies are thus aligning themselves with the turn to practices and their everyday accomplishment heralded by ethnomethodology in the 1960s (Garfinkel 1967).

## **Framework for the future classification of objects used in organizations**

A study of strategy tools is inherently tied to questions of materiality and objects. We therefore consider it beneficial to look at the literatures on sociomateriality, boundary objects, and epistemic things/activity objects to locate within these theoretical categories the tools and objects we came across in our case. For this purpose we draw on Nicolini et al. (2012, p. 624) who synthesized research streams that theorize the role of objects in organizations in an analytical framework combining boundary, epistemic, activity, and infrastructural objects.

Boundary objects are things that can have different meanings for participants, allow heterogeneity and cooperation to coexist, and have interpretive flexibility (Star and Griesemer 1989). Boundary objects provide structure for informatic and work process needs. As boundary objects are dynamic between ill-structured and tailored uses, different groups can work together without consensus, using ‘organic infrastructures’ (Star and Griesemer 1989). They are the ‘stuff of action’ that resides in the interstices of social worlds that can, therefore, be vague but useful (Star and Griesemer 1989). Star and Griesemer (1989) give a list of four kinds of things that can function as boundary objects: repositories, ideal type things, coincident boundaries and standardized forms. Because of their ‘interpretive flexibility’ boundary objects are tools that facilitate knowledge sharing across functional boundaries (Carlile 2002). According to Carlile (2002, p. 442), boundary objects can be “described as a means of representing, learning about, and transforming knowledge” in innovation and product development. Prototypes, PowerPoint presentations (Kaplan 2011), and schedules are examples of boundary objects.

Epistemic things (Rheinberger 1997) embody what one does not yet know. As objects of enquiry and pursuit they are characterized by lack and incompleteness (Ewenstein and Whyte 2009). Epistemic things have an open-ended nature and an emotional holding power that creates attachment. Such objects of expertise can have the function of triggering and driving a creation process (Knorr Cetina 1997). We ascertain that when experts collaborate, their wants are

directed towards a material object, often expressed as intermediate representations. Examples of such material instantiations are “test materials, visual displays, maps, prototypes, substances, etc.” (Knorr Cetina 1997, p. 25). These intermediary objects play an integrating role in collaborations because they materialize the current state of what experts are working towards and have not reached yet.

Activity objects act as organizers and motivators around which the community revolves/evolves: “Collective action is inherently object oriented and the pursuit of some kind of object(ive) is what motivates collaborative work” (Nicolini et al. 2012, p. 614; Miettinen und Virkkunen 2005). The activity object is by definition emergent, fragmented, and contradictory: “Collaborative action is thus maintained around the pursuit of a partially shared, partially fragmented, and partially disputed object” (Nicolini et al. 2012, p. 614; Miettinen und Virkkunen 2005). Examples of epistemic things/activity objects are the objective or the final product of collaboration, such as a new technology.

Infrastructural objects, or objects of daily use, constitute those ‘boring objects’ (Star 1999) that “combine to structure, anchor, and enable collaborative work” (Nicolini et al. 2012, p. 614). In many cases, the importance of these objects is only noticed when they are not available - Heidegger’s (1967) ‘broken hammer’ being a case in point. Other examples of infrastructural objects, in addition to the much-discussed hammer of philosophy (Harman 2011), constitute computer programs, phones, tables, and paper.

In their framework, Nicolini et al. (2012) call those ‘mundane’ things that provide infrastructural support “tertiary objects of collaboration”. Those boundary objects that serve as work facilitators across different types of boundaries are “secondary objects of collaboration” and epistemic things and activity objects are “primary objects of collaboration”, objects which “trigger/sustain/motivate cross-disciplinary collaboration” (Nicolini et al. 2012, p. 625).

According to the framework, material infrastructures constitute a rich ecology of supporting objects, whilst boundary objects act as translation and transformation devices, epistemic objects motivate cooperation and attachment, and activity objects hold together knowledge and trigger innovation. We apply the framework in a strategy as practice context to fill the gap of how such a differentiated and integrated view of objects can enrich the strategy tools literature.

### **Sociomateriality and the use of strategy tools**

We span the boundary from strategy as practice to materiality because “strategy tools assume the status of an artifact” (Spee and Jarzabkowski 2009, p. 225; Jarzabkowski and Wilson 2006). In their role as artifacts, strategy tools structure information and provide “grounds for interaction around a common tool that is easily recognizable by participants in a strategy task” (idem). Clark (1997) and Stenfors et al. (2004) declare that practitioners prefer transparent and simple tools, a proposition we will test in the context of the tools chosen by the creative professionals. In a context outside of classical management applications we will test empirically the statement that “simple tools such as the SWOT analysis are considered more flexible, because they can be quickly grasped by managers and adapted to a strategy task” (Spee and Jarzabkowski 2009, p. 225; Frost 2003). It is evident that strategy tools can be used differently depending on their contexts (Spee and Jarzabkowski 2009) and we investigate how they are used in an explicitly creative context. In doing so we address the gap of materiality in the strategy as practice research agenda: “Less is known [...] how these practices are materially [...] mediated” (Kaplan 2011, p. 321). The “relative neglect of the role of material artifacts” (Jarzabkowski et al. 2013) in strategy as practice is partly ascribed to inconsistent and vague definitions and theoretical concepts in the field. We address these inconsistencies by applying a coherent framework of objects to strategy tools use.

In our study we include the organizing work that goes into the implementation of strategies (Vaara and Whittington 2012), because when we ask how useful the strategy tools we teach are

in improving decision-making (Wright et al. 2013) we have to consider their operative application. Ewenstein and Whyte (2009) criticize that the literature had emphasized the roles objects play and not the nature of the objects themselves, a point we address in our empirical paper that describes strategy and work objects in detail. The combination of an empirical study on strategy tools and a theoretical framework of objects promises to provide insight into how an awareness of materiality in strategic practice can enhance an effective use of the tools applied in making and implementing strategy. The research contributes to the overall agenda of practice research, namely to “understand the dynamic nature of practice” and to “shift attention from the adoption of so-called best practice toward the development of promising practices” (Antonacopoulou 2007, p. 1294).

## CONTEXT AND METHODS

### Research setting

*Os Burgueses* [The Bourgeois] is a Portuguese fashion design brand. The designers Eleutério and Mia founded it in 2009. Together with a small team of interns they have since produced six seasonal collections and participated in four iterations of the national fashion week *ModaLisboa*. In 2011 they received the *Award for Best New Talent 2011* from Fashion Awards Portugal. In 2012 they were nominated for the Stylist Golden Globe, a national TV award. The designers draw inspiration from society: ideas are transformed into stories that the designers write themselves and then materialize in their collections. This way, each collection is an act in a story that they describe as “opera”. Each season’s design shows the evolution of the story that is meant to visualize the development of people/society.

Strategy tools were not a focus of the study when we started it. The topic emerged as we saw how creative professionals with a background in fashion design struggle with managing the

commercial side of the business. Given these struggles, the creative directors attended a management course directed at fashion professionals in early 2011 and took several steps to educate themselves “managerially”. We follow the process of the deployment of strategic tools right after the professionals learned them, until their second revision a year later. Our proximity to the actors of the case allows us to assess critically the usefulness of the strategy tools the designers learned. We picked the brand *Os Burgueses* as our research site because its directors show high creative potential and we were interested in how creative practices turn design talent into business success. The interest in an organization situated in the creative rather than more classic industry field is designed to test the hypothesis that management theorists and practitioners may be able to learn some new tricks from non-conformist and creative approaches to problem solving.

### **Research design**

Data collection took place through the use of ethnography. The first author followed the production of a seasonal collection, which takes eight months from idea generation to presentation in Fashion Week. To zoom in (Nicolini 2009) on the use of strategy tools she gathered documents on strategy making (two years) and implementing (eight months), attended the revision and updating of the strategy plan, and observed the effect of the strategy implementation tools. Whereas the ethnographies that classic ethnomethodological work drew on were primarily oriented to accurate recording of actual talk, contemporary ethnographic work is increasingly addressed to visual data as well (Emmison et al. 2012). Visual data plays a key role in this paper. Alongside researching how creative professionals use strategy tools we also focus on their use of visual artifacts as a key part of the strategy process. We have the advantage of being able to see how “beginners” rather than experienced managers approach doing strategy and using tools and visual devices. Visual data aids understanding of “the attraction of simple techniques as SWOT or the Five Forces [that] may lie [...] in their power

to stimulate and communicate new insights visually” (Vaara and Whittington 2012, p. 297). Data from a specific case study are the basis of our theoretical generalizations (Eisenhardt 1989, Geertz 1973).

### **Data collection and analysis**

We gathered strategy documents produced by the designers, the teaching materials of the course “Management for fashion professionals” at the Chamber for Trade for Fashion and Textiles, and a book the designers read called *How to set up and run a fashion label* by Toby Meadows (2009). Data consist of these resources, 160 hours of observation, 130 pages of ethnographic field notes, eight one-hour interviews and notes of three strategy meetings. Our attention in analyzing the data is oriented to the role strategy tools play in the process of defining and implementing the strategy. We draw from a collection of photos that illustrate the examples we use. Following a recommendation by Ray and Smith (2012, p. 291) we combine ethnography with photos because they are “especially well-suited for research on organizational processes and particularly on any process traced across an organization or set of activities” (Ray and Smith 2012, p. 292; Buchanan 2001; Heisley and Levy 1991; Petersen and Ostergaard 2004; Emmison et al. 2012). Photographs have the advantage of capturing organizational reality when “words alone are inadequate to capture the field experience” (Ray and Smith 2012, p. 289; Bateson and Mead 1942; Harper 1994). In our case the visual documents were particularly helpful in representing strategy tools being made and used and categorizing them according to the literature on objects. For data analysis we categorize all objects used in strategy work according to the literature on objects that we have reviewed. Doing so allows us to observe where shifts take place and what tool in which function is most effective. Our findings add theories on objects to the current knowledge about strategy tools in strategic practice.



## RESULTS

We looked at how strategy beginners make and implement strategy. In our case people with a non-management background and proven creative ability learned about strategy tools, chose which ones they would adopt in their firm, and described what benefits they gained from their newly learned and applied strategy knowledge. Furthermore, we observed how the designers proceeded to implement their strategy plan using strategy tools as well as what challenges they were confronted with, how they overcame them, and how well they succeeded at translating the new strategic insights into work practices.

### **The use of formal strategy tools**

In early 2011 the company's creative directors, Eleutério and Mia, took a three-month part-time course called "Management for fashion professionals" at the national Chamber for Trade for Fashion and Textiles. Before this, they had completed a five-year degree in fashion design and founded their own brand *Os Burgueses* in 2009. Eleutério explained the expectation they had when enrolling in management training:

"The people who don't have management experience are lost, because they're not making money, they don't know what they do wrong, [...] you saw how it is here, all at the same time."

The course consisted of modules on several areas of management including strategy and planning. Eleutério said about the course: "The course brought our attention to things", meaning that they benefitted from learning about management theory, after having been practitioners for two years already. In the course the designers heard about strategy tools for the first time. Mia's reaction when she heard about a SWOT analysis was:

"What s\*\*\* is this? Who's she?"

But as Eleutério stated, they soon saw the need for and benefits of introducing management knowledge to their business:

“[As part of the course] we made a company analysis: understand processes, how to increase profits, decrease costs, manage time, how much you spend on processes. The company is split up in processes, that is, it wasn’t before.”

The quote describes the situation the brand was in: the designers realized that their creativity could only develop freely if it was accompanied by smoothly flowing management processes which would ensure the financial basis of the firm. The designers were looking for a way to introduce structure and management rigor to the firm. At first they made a company organogram that listed tasks for the creative directors and split responsibilities between them. The organogram states that Eleutério is responsible for creation, marketing and communication, and Mia for logistics, commercial operations, and production. Eleutério added: “Of course they cross.”

As an assignment for the strategy module they made a 15 page strategy plan including the following strategy tools: an analysis of the brand’s position in the market as a graph with an x and y axis locating it in relation to national competitors, a PESTEL analysis (political, environmental, social, technological, economic and legal factors listed by importance from 1-6), a SWOT analysis (strengths, weaknesses, opportunities, threats in a 2x2 matrix), and a SMART analysis (specific, measurable, achievable, reasonable, timely). The strategy plan contains a mission and vision statement and strategic targets in the short, medium, and long term, all in the form of text. It defines key clients and the brand’s identity, which is supported by a series of pictures summarizing the last five collections. The whole gamut of plans could be considered a strategy tool.

The creative director Eleutério went through the plan with the first author in June 2012, one year after its making. He stated that

“It is good to re-read this. When we made the plan, the company was changing. We had just entered ModaLisboa [the national fashion week], and we expressed this [change] by launching a new story, ‘An opera for a new world’ [theme which unites a series of seasonal collections]. Now it [the plan] has to be revised, adjusted.”

The designers felt that the brand had matured since it presented its first collection at the national fashion week and that this should be considered in the revision of the strategy plan a year later. Eleutério wanted to rewrite it this year:

“Ideally I do 2012 before we make the next collection. To define the brand, focus. Make a new analysis [...] and see the difference.”

The content of the plan reminded the designer of the team’s objectives. When reading the plan’s statement that “the brand is a must buy as an investment in quality, value, and art” he affirmed: “When we create we have to think of those three [points]. We have to focus on what the clothes need to have.”

The combination of strategic objectives with targets in the actual clothes’ design is repeated throughout the strategy plan. Descriptions of strategic objectives and design goals continually mix, e.g. in the mission statement where the ideal of making a “unique design” is followed by “reaching a global market”. When Eleutério came across the sentences

“[We want to] establish *Os Burgueses* as the brand with the trendiest, most innovative, artistic, fresh and free spirited clothes in the country. We exist, we are here to stay and we are for all” in the “targets and objectives” chapter of the strategy plan, he called out: “I will print this in big and put it up on the other side [in the work studio]!”

Although he wrote the strategy texts and the team members read and approved it, he wanted certain parts of its content to be visually present during their daily work on the collections. This was also the case for the “mantra for the press”:

“The image we want to transmit for men is Alan Cumming and Jared Leto, old and young, Helen Mirren and Anne Hathaway. I will print their pictures, make an inspiration panel on the other side [in the work studio].”

Points like this description of the images that they wish to transmit form an integral part of the strategy plan which in its entirety consists of a balanced mix of pure text, strategy tools including text and pure visual material such as pictures.

When revising the plan, the strategy tools captured Eleutério’s attention. He explained in detail where he thought the content must be changed to reflect the company’s current situation. The graph with an x and y axis locates the brand in terms of commerciality and luxury in relation to national competitors. Eleutério commented:

“Obviously we only included the ones [competitors] we find good. We are here and the arrow shows where we need to go [from x -1, y 3 to 0]. This is where *White Tent* is, our closest competitor, and *Ricardo Dourado* is here, our best competitor [he points at their location in the graph].”

The designer used the graph to think about how their design work is located in comparison to the market, where they wanted to be, and what they had to change to get there. Again, the content of the strategy tools reflected design work and not management decisions.

The designers used a detailed PESTEL analysis to rank each factor, comment on it and delineate the opportunities of the political, economic, etc. situation they were in. This resulted in a critical analysis of what can and should be improved, e.g. to create durable timeless clothes which

respond both to a crisis economy and increased environmental awareness among consumers. The designer Eleutério relativized the content of the PESTEL analysis from 2011 altogether:

“Technology would be higher now. Environment is low at the moment because we lack the know-how. Politics is lowest; we are not political like Vivienne Westwood who is known for being left wing. We have a controversial name though, we need to be careful.”

The designer found it beneficial to be reminded of the six factors in the PESTEL analysis and to put them in a design context. The PESTEL analysis stimulates a holistic way of thinking of fashion and the role of the brand in society.

The SWOT analysis was the strategy tool that received most attention in the 2012 revision. The designers are aware that they need to turn their creative potential and the reputation of the brand into a commercial success and the SWOT analysis translates this awareness into a detailed account of their current and possible future situation. The 2012 revision of this tool focuses almost solely on the management aspects of the brand. For example, in the “opportunities” section, the “Association with artistic projects” (2011) was replaced by “Creating a second line at the factory” (2012). Some evolution and learning is evident since the introduction of the strategy plan: the designers had learnt how to make a better SWOT analysis, one that reflects the company’s state and responds to their need for a tool which provides strategic guidance as to *where* they want to be.

The SMART goals tool is the only one that contains goals that are quantitatively measurable. It specifies the amount by which the brand wants to increase its online visibility and the number of buyers. The tool provides the highest degree of control because it is very specific. Nevertheless it was dropped in the 2012 update of the plan because the team, due to its small

size, was constantly aware of these developments and thought that the other strategy tools and the rest of the strategy plan laid out the strategic direction quite well.

To our enquiry Eleutério answered that he found the plan very useful. He thinks that having the strategy plan gives an advantage to the brand: “Other designers don’t have one.” He writes it and then Mia comments and approves. Making it was not a team activity characterized by agreement reaching processes. The results of the making of the formal strategy plan are summarized in Table 1 where we categorize all the objects of the plan according to their theoretical category (Nicolini et al. 2012). We included tools which contain text and pure objects, but not pure text such as the mission statement.

**Table 1. The strategy plan with traditional tools for strategy making according to theoretical object categories**

The actual object is underlined

<b>Infrastructure</b>	<b>Boundary Object</b>	<b>Epistemic thing/ Activity object/ Object of expertise</b>
Organogram present on <u>studio office wall</u>	<u>Organogram</u> made in team work, splits responsibilities between creative directors	Organogram as an <u>ideal</u> management where tasks are carried out independently and reliably
<u>Pictures</u> present on <u>studio wall</u>	Pictures of <u>actors</u> who represent the brand's imagined <u>identity</u>	Shows <u>image</u> the collection should transmit
X and Y axis provide <u>grid</u> for location of brands; <u>arrow</u> indicates the direction <i>Os Burgueses</i> want to go	<u>Graph</u> locating the brand in comparison to competitors (national ones in 2011, national and international ones in 2012 revision)	Visualizes <u>future direction</u> of brand in comparison to competitors
<u>Framework</u> of macro-environmental factors as basic structure	<u>PESTEL analysis</u> comments on firm's situation with respect to PESTEL factors	Suggests <u>improvements</u> with regards to PESTEL factors
<u>2x2 matrix framework</u> as basic structure	<u>SWOT analysis</u> communicates firm's situation according to SWOT factors	Guidance on <u>future direction</u>
<u>Framework</u> as basic structure	<u>SMART goals</u> communicate measurable goals	Detailed view of <u>future</u> state if goals achieved

The table shows that all the tools have an “objectual” aspect and that they take on roles on all three theoretical levels, as providing infrastructure, enabling communication, and motivating collaborations towards future objects.

### **The use of strategy implementation tools**

The designers now wanted to benefit from the elaborated strategy plan by putting it into practice. Their hope was that the tools would help them carry out the tasks connected to their strategic goals in a timely and authoritative manner. Although the creative directors agreed about where to go and how to get there, a subtle form of enforcement was necessary so that formalized individual responsibilities would be carried out reliably. The development phases of the collection can be split into creative and managerial work, with one side consisting of developing a concept, selecting fabrics, drawing the collection, making prototypes, and producing a runway show, and the other one being the management of the fashion business, comprised of negotiating with factories, producing a sales book, making prices, or taking orders. The designers translated these tasks into intermediary steps towards reaching the strategic objectives. In March 2012 the designers introduced a strategy implementation tool: a poster-size calendar of the current year, listing which task has to be finished by whom and when. Different colors mark the collection in question (blue for spring/summer2013 or orange for fall/winter2012). Image 1 shows the calendar on the office’s wall.



**Image 1: Calendar with tasks of the year on office wall**



The calendar prominently displays the tasks to be done for each collection (in blue and orange according to the season), by whom and when.

Dates that are fixed, e.g. the bi-annual fabric fair, are marked with an x. Tasks which go on over a certain time span occupy several boxes/weeks on the calendar. Shortly after the calendar's introduction a pin and a string were added to mark the current week with its corresponding tasks. The creative directors believed that such a timetable would give them an advantage in the future. Mia stated:

“Now we need to respect the calendar. The timetable improves things. We won't be doing everything at the last minute.”

Eleutério added that “In the beginning we thought we were thinking, maturing, being creative, artists; now we are organized.”

The creative directors appreciated the rigid time management the calendar imposed. Although the making of this strategy implementation tool was smooth, a few weeks of its use showed that its presence on the office wall was not strong enough to enforce adherence. The designers introduced a further tool, a weekly update of the calendar on an A4 sheet that they put up in their studio, located next to the office. The table on the sheet lists which tasks have to be carried out currently, who is responsible for it, and the time frame for completion. The whole table is highlighted in traffic light colors: red for overdue tasks, yellow for the tasks to be fulfilled currently, and green for tasks that are coming up soon. There is one line below in white for tasks to be fulfilled within an unspecified time. At the right end of the table is a column of blank boxes, supposedly to be ticked when the task has been carried out, but it is not used. See the weekly update on Image 2.

**Image 2: Weekly calendar update in traffic light colors**

<b>OS BURGUESES</b>		
RESPONSÁVEL	MAIO / SEMANA 4	PRAZO
ELEUTÉRIO	COLECÇÃO SS13 - Desenho	Semana 7 fora do prazo
MIA	COLECÇÃO SS13 - Acabamentos, experiências	Semana 7 fora do prazo
MIA	CUPONS E AVIMENTOS - Encomendar	Semana 6 fora do prazo
MIA	COLECÇÃO SS13 - Negociar Fábricas	Semana 5 fora do prazo
ELEUTÉRIO	COLECÇÃO SS13 - Prototopizar	5 Semanas
MIA	COLECÇÃO SS13 - Fábrica	Dentro de 6 semanas
ELEUTÉRIO	DESFILE SS13 - Produção	Dentro de 7 semanas
ELEUTÉRIO & MIA	DESFILE	Dentro de 10 semanas
ELEUTÉRIO	PRESS - Digitalizar Press Clipping	(Sem data prevista)

The weekly update of the calendar shows at which stage in the calendar the collection should be: red means overdue, yellow to be done now, and green to be finished soon. The white boxes are supposed to be ticked when the task is accomplished.

Planning ahead and following a schedule is meant to allow the designers to make a pre-collection for the first time, an important step in marketing the collections to commercial shops. Doing this is a demanding time management effort, since a pre-version of the Spring Summer 2013 collection has to be ready in June 2012, four months before the presentation of the final collection at the fashion week. While there is a high discipline and strong work ethic within the team, the designers find it difficult to keep to the time schedule. One reason for this is the number of unforeseen events that they encountered. When the design team was nominated for the Style Golden Globe, a national TV award, they questioned the plan of launching a pre-collection three weeks after the awards ceremony. Eleutério says:

“Everything depends now. We have to think. [...]. We tell the buyers. But the press? We haven’t decided yet. [...] The timing. It is tighter. [...]. But first we need to reflect, understand the market. When to launch. Know the pros and cons.”

The creative directors were worried about launching their first pre-collection at a time of high media attention. Whilst the making of a pre-collection is profitable from a financial point of view, it is risky from a design aspect, because an immature pre-collection might have a harmful effect on the final collection and the brand’s image. The timetable contained no “slack” for such reflection processes. When after the awards ceremony inquiry was made about the pre-collection, Eleutério answered:

“We are not making the pre-collection. We lost the timing.”

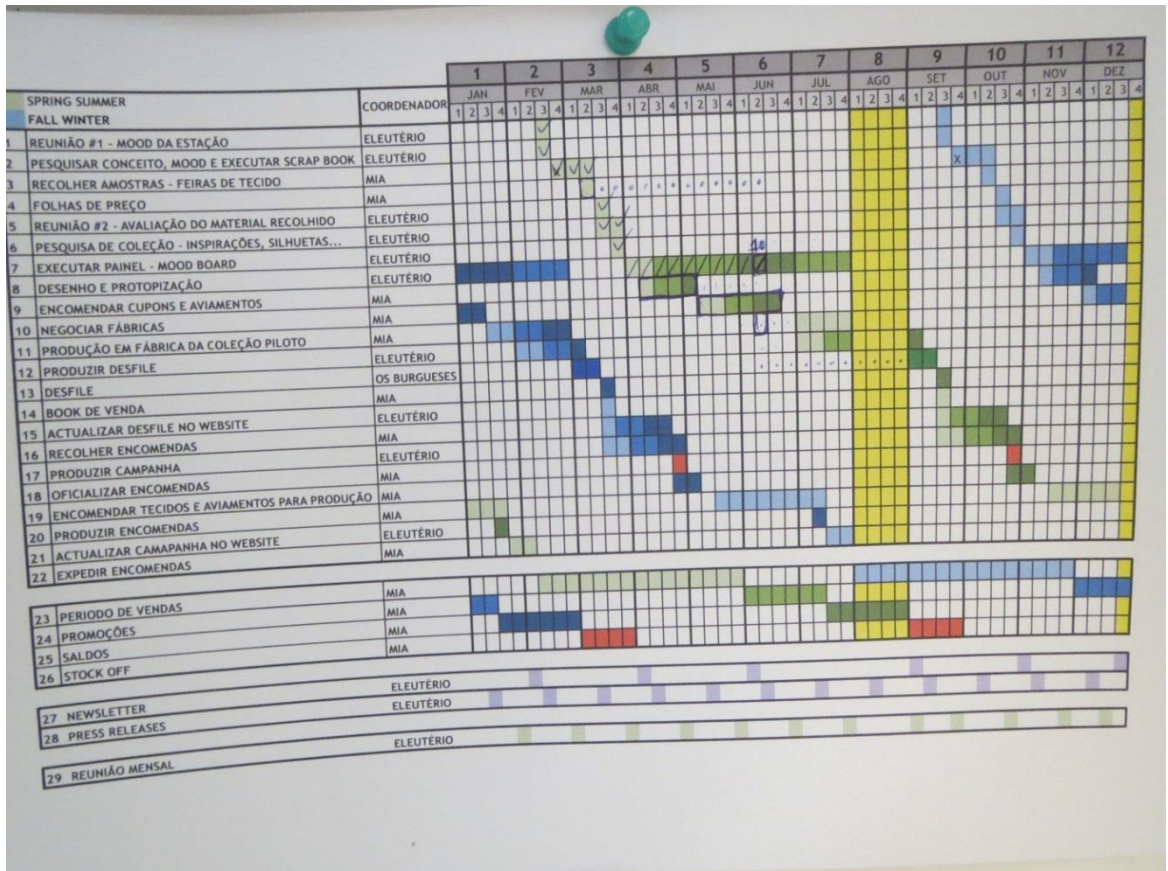
A few weeks later the collection Spring/Summer 2013 was behind schedule. Instead of patterns for prototypes going to the factory as planned, drawings of selected designs were lying on the floor. Although this step, selecting drawings of designs, was taken several weeks before and the making of prototypes had started, the designers stopped briefly after. Things didn’t feel

right to them. They had the feeling that they had to improve their “basic patterns”. These are patterns for blouses, dresses, pants, and other garments that are used for every collection and adjusted for the individual piece’s design. The designers’ ambition was to make perfect basic patterns and they had time to work on the improvements now, they decided. Then an order came in to make corporate uniforms, a task that received priority because it ensured the financial income of the company. The basic pattern and corporate uniform projects were not part of the strategy implementation tool and were not incorporated later. The calendar was temporarily abandoned because the projects were considered important and the designers did not yet perceive time pressure. Meanwhile, several weeks into making prototypes, there was still no final decision on colors. The office wall calendar had been unofficially abandoned and substituted by a less complex calendar on an A4 sheet on the studio’s wall in July 2012. Eleutério commented:

“It had too many processes. We cut it from 43 to 29. Now it is simpler, the timings weren’t correct. We change it with our experience. Now it changes the color: as importance rises the color becomes darker, you see here, the further we are into the process the darker the green.”

The new calendar, shown on Image 3, was adjusted to the dates of the international fashion industry. Eleutério warned the first author right after she looked at the calendar to compare it to the old one: “We are behind in every calendar.”

**Image 3: Simplified calendar adjusted to international dates**



In this calendar there are fewer tasks (29 instead of 43). As the due date of a task approaches, the color turns deeper.

Two weeks before the fashion show in October an improvised calendar was attached to the formal one, leaving a blank space for every day to write down last minute tasks and share them. It remained almost empty. During the final phase the strategy implementation tools were completely abandoned. At this stage, the challenge was not implementing strategy but putting it into practice by getting work done. Time management was substituted by working overtime and improvising. Ideas were put into practice immediately, without consulting the strategy tools. Such processes of immediate “doing” could be found in the creative as well as the management practices: pieces of clothing were added to the collection by going from being

someone's idea to being made immediately, without the intermediary steps of defining the concept, drawing, and prototyping. The same was true for management decisions: the team's staffing plan remained flexible to the last minute, with frequent changes of roles being the order rather than the norm. The creative directors remained calm in this scenario. As Eleutério explained: "We are fine with the collection now. Everything is under control. We have the experience now."

After the fashion show Eleutério wrote a strategy calendar for 2012 until 2015. The designers believed that with a functioning calendar in place and a flexible long term outlook they could achieve their strategic goals. The most important of these was switching from working towards having a collection ready for the national fashion week to having it ready for the commercial sales season. The switch represents a crucial step towards the commercialization of the brand because during this time re-sellers buy their stock. This transition requires the designers to set the deadline for finishing their work on a collection three months before its presentation at the runway show, a challenge that they want to encounter gradually with the 2012-2015 long term plan. Table 2 lists the strategy implementation tools and classifies them according to their object category, describing whether they build infrastructure, facilitate communication and consensus finding, or motivate and trigger results.

**Table 2. The strategy implementation tools according to theoretical object categories**

The actual object is underlined

<b>Infrastructure</b>	<b>Boundary Object</b>	<b>Epistemic thing/ Activity object/ Object of expertise</b>
<u>Poster-sized calendar</u> on <u>office wall</u> ; <u>colors</u> indicate which collection (Summer or Winter); <u>pin and string</u> enforce presence	<u>Calendar</u> shares knowledge of tasks, responsibilities and due dates	Exemplifies an <u>ideal</u> time management and work allocation
Calendar update on <u>studio wall</u> ; <u>traffic light colors</u> visualize timeliness; <u>blank boxes</u> to be ticked	<u>Weekly calendar update</u> reinforces calendar's current task	No primary role
Simplified calendar present on <u>studio wall</u> ; <u>colors</u> turn deeper	<u>Simplified calendar</u> communicates tasks, responsibilities and due dates; includes dates of international fashion industry	Exemplifies <u>goal</u> of following plan and international dates
<u>Blank space</u> in improvised calendar on <u>studio wall</u>	<u>Improvised calendar</u> provides space to organize and share work	Idea of <u>formalized improvisation</u>
Long term calendar present on <u>office wall</u>	<u>Long term calendar</u> (2012-2015) to manage transition from national to international fashion industry	Goal of successful <u>transition</u>

The results reveal that different versions of calendars were used to implement strategy: from improvised calendars with blank spaces to organize the current week to formal three year calendars to trigger long term transitions in the collections' schedule. Although the table shows

that calendars and their contents can fulfill the function of infrastructure, boundary objects, and epistemic objects, we aim to use the results to unfold alternatives which might respond better to the creative professionals' needs and practices.

## **DISCUSSION**

Our findings allow us to make three contributions to the literature. First, the separation between theory and practice is evident in all phases of strategizing, with a growing distance occurring between strategy making and implementing and strategy tools and work objects. Second, the effect of this distance can be lessened when professionals are experienced in internalizing what is being asked from them in terms of strategy and design tasks: it is then that they intuitively pursue the targets of their work and comply with the set strategy goals by delivering intermediate and final design objects on time. Third, a comprehensive application of Nicolini et al.'s (2012) framework to strategy tools and work objects shows how materiality can be used to overcome the theory – practice gap, by providing a dynamic model in which occur constant exchanges between theory and practice, making and implementing, strategy tools and work objects, and across the levels of infrastructure, boundary objects, and epistemic objects.

Whereas other papers state that the making of strategy tools requires agreement-reaching processes (Kaplan 2011, Yates and Orlikowski 2007, Kaplan and Jarzabkowski 2006), in our case it is implementation that is important. The literature recognizes this need for effective transitions in practice: “strategic management often fails due to inadequate strategy implementation, rather than unforeseen circumstances” (Nakakawa et al. 2011, p. 83; Hoogervorst and Dietz 2008). Initially, creating a strategy through the use of tools flows smoothly: as the data show, the designers are at ease with using strategy tools once they are introduced to them. They find them useful and apply the strategy tools in the process of making



a strategy plan, showing “reflective strategizing practice” (Jarrat and Stiles 2010, p. 38). The creative directors find that it is a great advantage for their firm to have this plan and to re-read and revise it after a year. The process of making the plan stimulates their strategic thinking.

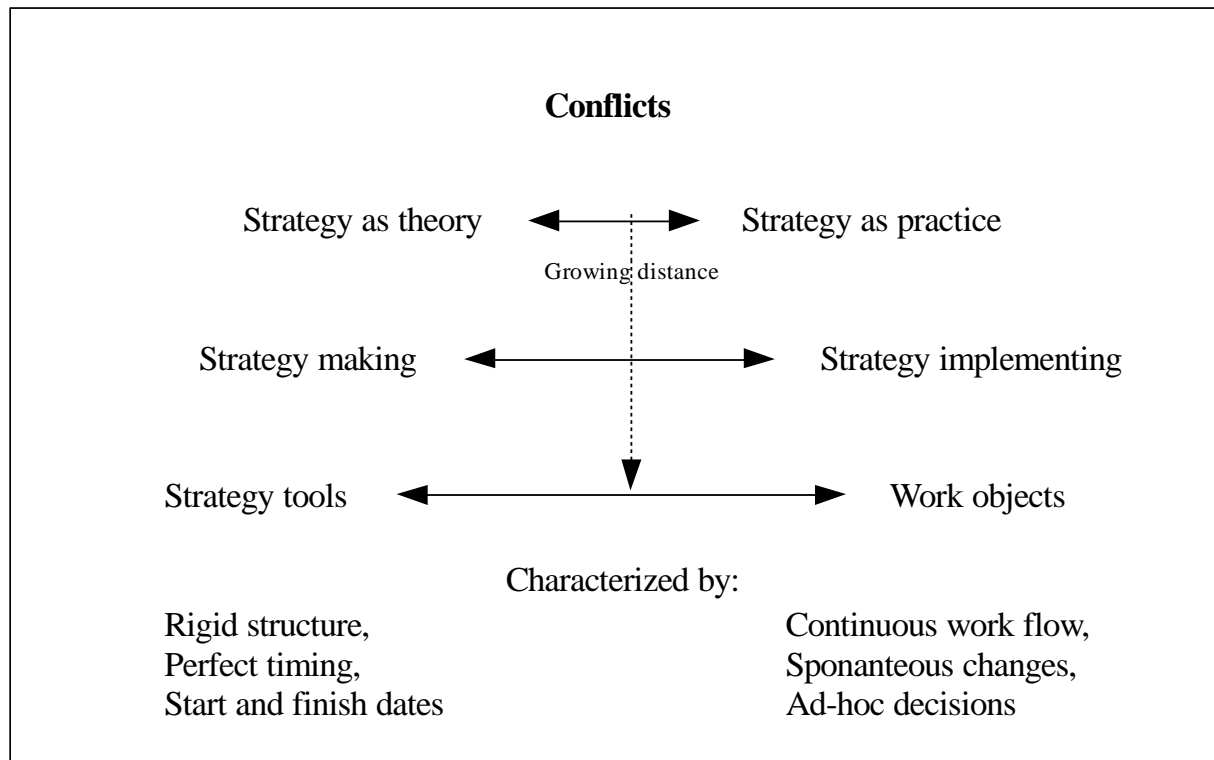
The alignment of participants in the strategy formation process is a minor challenge because few people are involved. Our data show that the formal sharing of strategic goals takes place in the form of one person elaborating the strategy plan and the other commenting and accepting, enabling the sharing of a strategy plan (Spee and Jarzabkowski 2009). The designers find that strategy tools that are transparent and simple to use (Clark 1997, Stenfors et al. 2004) are helpful only for strategy making but are not much use for its implementation. Therefore it is not necessarily a question of understanding how strategic choices are made in organizations (Kaplan and Jarzabkowski 2006) but how they are (effectively) implemented. Also, in practice, the tools, once they are made up, get forgotten until they are remembered, for example, when they are revised after a year. Our findings confirm “managers do not always select the most appropriate tool for each situation, but tend to rely upon simple, familiar tools” (Kaplan and Jarzabkowski 2006, p. 9; Clark 1997; Rigby 2001; Worren et al. 2002). Their simplicity does not require deep thinking or extensive problem solving, which is why their impact can be considered light.

## **Conflicts**

Our findings show that practitioners encounter two sources of conflict which are critical: The first source of conflict we find in the case is between strategy as theory and strategy as practice in that the separation between strategy making and implementing resembles the separation between strategy tools and work targets. The second source of conflict appears in the first weeks of the plan’s implementation: the plan is very rigid, in that it requires perfectly timed work processes with start and finish dates, when the nature of the work is continuous, spontaneous and partly depends on an ability to improvise, adapt, and change decisions when circumstances

change. The sources of conflict, their relatedness and increasing divergences are summarized in Figure 1.

**Figure 1: The sources of conflict in the case**



As we shall see, the conflicts outlined above can be solved using the insights from this discussion, namely that experience can compensate for deviance from formal structures, that an integrated use of objects in their theoretical categories supports reaching strategic objectives and that an active inclusion of work objects into strategy work and vice versa benefits the outcomes reciprocally. In all this we highlight the role of materiality, i.e. the importance of having both strategy and work objects materially present.

### **Intuition and experience versus structure in strategy implementation**

The results depict that both creative directors fall behind in their tasks soon after the calendar is introduced. Even though they enhance the calendar with an update, the ad-hoc, spontaneous

and intuitive approach to work dominates over the structure that the strategy implementation tools are seemingly designed to impose. As the data about launching a pre-collection demonstrate, decisions are considered from various angles and intuition plays a major role but in the end it is time constraints that decide action. Time constraints are the real challenge to be overcome, because the role of intuitive decision making is justified when it meets an adequate level of experience in the decision makers.

Planning is theoretical and organized at the beginning of making a seasonal collection. This is represented in the formal strategy tools. However, they appear to be too sterile to be of real use once the pressures of daily work increase. As the Fashion Week deadline for finishing the collection approaches, the strategy planning tools are first abandoned and then the strategy implementation tools are gradually substituted by intuitive decisions, ad-hoc meetings, delays, and compensated by working overtime. To answer the question of how strategy tools are used and for what purposes (Spee and Jarzabkowski 2009) when “the most relevant performance evaluation of a strategy tool [...] is in the context of its immediate use” (Spee and Jarzabkowski 2009, p. 228), we can state that the tools in the case only pass evaluation in the strategy-making phase where their role of providing a starting point for strategic activities and providing guidance for the following improvised actions is highly valued.

The combination of talent and experience in a professional can compensate for the literal use of calendars, given that the actors’ degree of experience is sufficient. Intuition allows professionals to deviate from strategic plans; however, this is only successful when the content of the strategy plans has already become internalized. For this it is necessary that strategic plans be made carefully so that they are internalized. Therefore the doing of the planning is as significant as the plan itself. Then the key to success is combining intuition, planning, and creativity, all of these at the right time. Deliberately abandoning a plan can take place consciously and securely once the plan has been made and awareness of it created. In any case,

if things get worse one can always go back to the plan and know immediately what to do. These steps of internalization and making a resource to go back to are facilitated when strategy plans are material and visually present. Objectification provides a point of reference. As the improvisation literature indicates, people have to improvise around something (Barrett 2012), and the stuff that improvisation occurs around are the formal strategy tools, the implementation tools that follow them, and the initial intention to follow them. We have discovered an organic approach to strategy tool use here, one that shows that the application of tools is useful when professionals take and make the freedom to deviate when their creativity requires it and when strong primary objects (Nicolini et al. 2012) are in place to streamline the collaboration towards common goals.

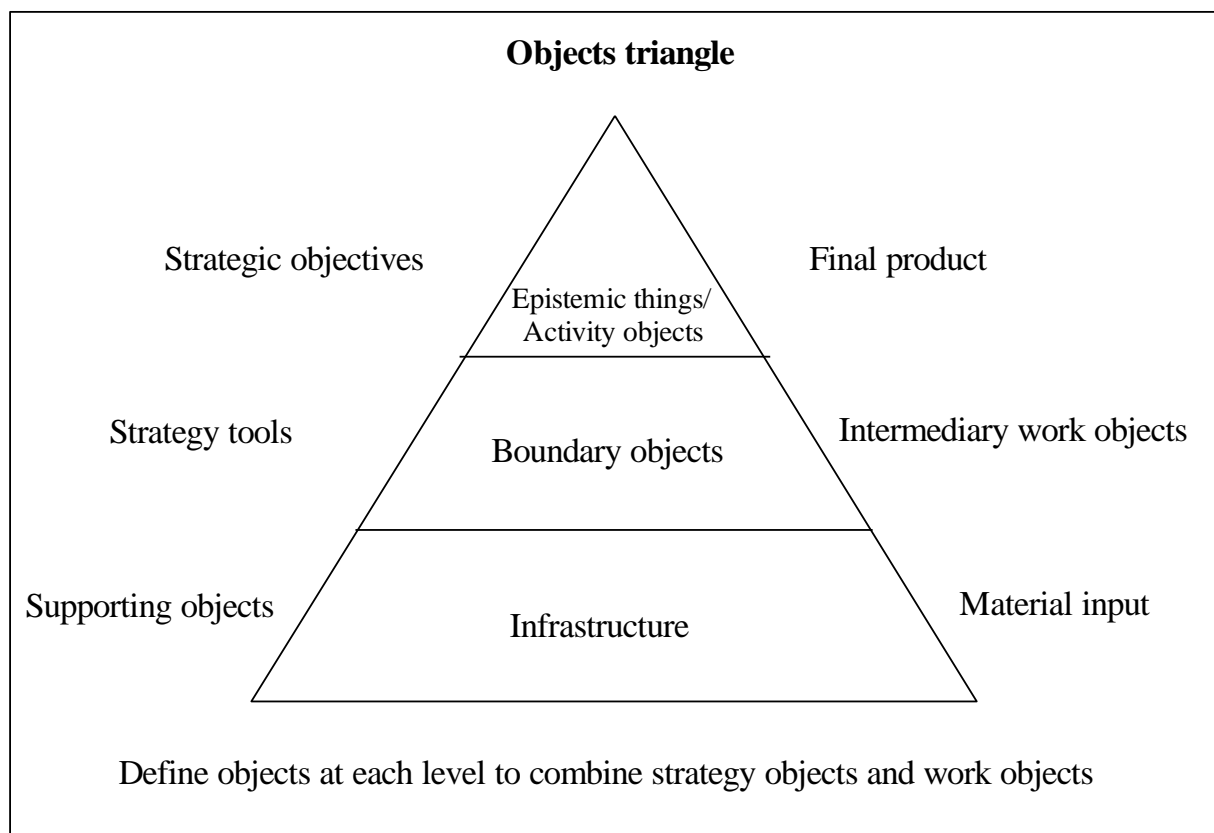
### **Strategy tools and theories on objects**

The comprehensive framework of theories about objects (Nicolini et al. 2012) explains the role of strategy tools as artifacts in a way that is better than only viewing them as boundary objects (Spee and Jarzabkowski 2009) because the roles include providing infrastructure and motivating the work, in addition to facilitating communication across boundaries. Using the solutions found in the case we suggest a model for strategy tool use in theory and practice. Nicolini et al.'s (2012) framework and the model resulting from our case show how a more differentiated use of strategy tools as objects allows creative professionals to overcome the separation between management and creativity and how the connected goals can be united.

Whereas Spee and Jarzabkowski (2009) have shown that strategy tools function as boundary objects, Table 1 highlights the force of categorizing strategy tools and their support objects according to a three level framework. In addition to creating shared understanding, such a model stresses the importance of infrastructural needs and pays attention to the motivational force of material objectives. Strategy making not only requires communication (Spee and Jarzabkowski 2011) but also the necessary raw materials and inputs, as well as the properties of strategic tools

that drive collaboration, inspire thought and increase motivation. These features of strategy tools manifest themselves in objects in the form of infrastructure, boundary objects, and epistemic objects. Such conjunction facilitates an alignment between the strategy tools and the work itself, not only between team members (Paroutis and Pettigrew 2007).

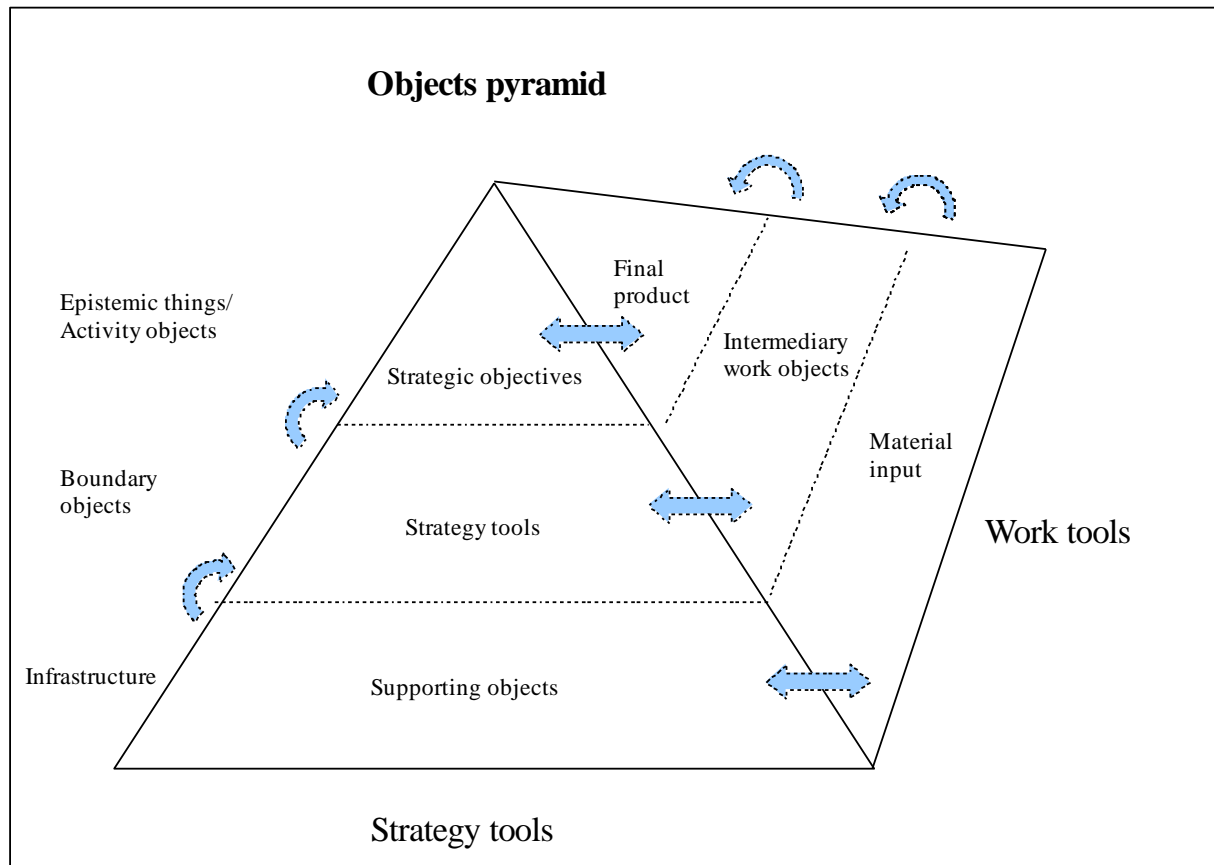
**Figure 2: Model of strategy and work objects, on the primary, secondary, and tertiary object level**



The objects triangle on Figure 2 shows how the conflicts addressed in Figure 1 can be solved using object categories: strategists define the material objects created and required at each level to arrive at the “top”. Managers should pay attention to specifying which objects motivate the reaching of strategic goals, which objects are needed to enable the communication of participants and which input and infrastructural needs have to be met so that the professionals

are able to reach strategic targets. The three levels of the strategy objects triangle need to be revised throughout the process to make sure that the appropriate objects are in place at each level.

**Figure 3: Three-dimensional strategy objects pyramid**



Drawing from our empirical data, we created a three-dimensional strategy model that shows the various levels at which managers can use strategy stuff in an 'objects pyramid'. The objects pyramid is shown in Figure 3. An additional side to the previously two-dimensional triangle of strategy tools is contributed. Representing the work objects of the designers in this way shows correspondence of the strategy objects at all three objects levels. The boundaries between object levels are now only dotted lines because an exchange between levels takes place.

An example of the combination of strategy and work objects shown in the objects pyramid is the ideas panel on Image 4. It is a panel located on the studio wall in which the latest stage of the collection's development is portrayed, plus its material inspirations. The panel represents an epistemic thing (Rheinberger 1997), which by definition does not yet exist, by visualizing where the collection is going. Additionally it serves as a boundary object by featuring the outcome of team members' conversations about design ideas, and it includes infrastructural input materials, such as fabric samples, which constitute part of the time table, i.e. selecting and ordering fabric. The ideas panel combines strategic and work process objectives in that it shows what the team is working towards to reach strategic goals.

**Image 4: The ideas panel as an example of a primary object**



The ideas panel represents the stage that the collection is at and where it wants to go, plus the inspiration. The team members share ideas and the result is displayed on the panel.

The ideas panel, so far not part of the strategy toolbox, shows that it is possible to create simple artifacts that are dynamic rather than static, as is the calendar, for instance. The objects of the work itself and its planned outcome need to be aligned with the strategy tools to overcome implementation challenges and allow creativity to flow alongside consistent management. In such a combination of strategy objects and work objects (as intermediary and final products) the outcomes are aligned with the plan in a timely manner. The rigid structure of a calendar is supported by the dynamic flexibility of seeing work progress and having the current stage at which the team is working constantly visually present. In this sense, some simple rules are used to facilitate flexibility and adaptability (Sull and Eisenhardt 2012). Doing things this way there is no abstract running after deadlines imposed by an outdated calendar but a shared awareness of the team's progress. The targets which the team is working towards are inherently present because they are expressed materially. Primary objects, although by definition not-yet-existing, to be useful need to be materialized in their current phase rather than being different and various vague ideas in people's heads. Materializing work objects at the infrastructure, communication/boundary object and motivation/epistemic things level is the key towards making strategy tools useful and seeing that they are used at the implementation stage.

### **Boundary conditions**

Our findings apply in collaborations within and across teams, with members from the same or different backgrounds, and when the outcome of the collaboration is a material object, for example in product or service development. When this is the case, the intermediary steps of strategy implementation and therefore work progress can be translated into the objects pyramid. The findings do not apply in a context where pure strategy making, as a design process, occurs without implementation and in a practical context without a tangible outcome. Our contribution was only tested in a case where agreement on strategic objectives was not a problem. Therefore,



we state that the model of strategy and work objects requires the consensus finding process among the participants to have been concluded to be useful.

## **CONCLUSION**

Creative professionals' use of strategy tools reveals an approach to strategy implementation that is promising for managers from other industries. The specificities of a creative industry, with its extreme mix of structures imposed from outside and a high occurrence of unpredictable events, demonstrate what strategy implementation needs to look like so that the strategies defined using traditional strategy tools can be effective. The heavy reliance on materiality in the fashion industry highlights the potential of creating a synergy between strategic and material objectives. Our findings show that strategists need to overcome the separation between theory and practice, strategy making and implementing, and strategy tools and work objects. We used Nicolini et al.'s (2012) framework of a hierarchy of objects to develop a model that requires users to define not only strategic objectives but also the work objects that correspond to the strategy tools. The model translates strategy targets into work targets, including the intermediary stages of a product's development, and shows how implementation tools become dynamic and inherent in team members' work practices. Doing this not only aids workers of creative industries but shows how strategy makers from any field can motivate professionals to work towards shared goals by representing their needs materially, communicating through things, visualizing objectives, and making targets specific and directly tied to what people are working on at that moment.

For practice our results suggest that users of strategy tools should develop flexible implementations tools at the time that they develop their strategy plan. The flexibility ensures that the plan can be adjusted to circumstances and allows for ad-hoc changes of priorities, whilst

strengthening the role of tasks that are not urgent but important for reaching long term targets. Objects play a significant role in improvised flexibility, we suggest, a possibility that is yet to be explored. For example, minimal structures (Kamoche and Cunha 2001) may be composed of objects in addition to rules and social conventions. Our paper shows that this can take place when the strategy tools, the strategy implementations tools, and the product targets are aligned and reinforced as primary objects with a visual/material presence. One consequence is that when practitioners think of implementing a strategic plan they should think of the objectives articulated in the plan and the outcome of their work as one, as epistemic things (Rheinberger 1997) or activity objects (Nicolini et al. 2012, Miettinen and Virkkunen 2005). The three-dimensional model of strategy tools translates insights from sociomateriality into the practice of strategy. The model can guide managers' heedfulness to the materials they need to pay attention to so that teams can collaborate and reach targets in the best possible way, by being supported on the level of infrastructure, communication, and motivation.

### **3. The sociomateriality of teaming: The role of objects in creative collaborations**

#### **Abstract**

Recent literature on materiality and collaborations has brought the role that objects can assume in human-material interactions into sharper focus. Applying the findings from an eight month ethnography conducted in a fashion design brand we show how experts collaborate to create and stage a seasonal fashion collection in a process we identify as teaming, i.e. solving problems through temporary, expertise-based teamwork. We categorize the objects used in the case in a framework of infrastructure, boundary objects, and epistemic objects. The findings allow us to contribute a model of object use in short-term, goal-oriented collaborations of experts that reduces the need for coordination and leadership. Knowledge and application of the inherent properties of objects facilitates teaming and allows participants simultaneously to work towards individual and shared goals.

**Keywords:** sociomateriality, objects, collaboration, fashion, teaming

## INTRODUCTION

“Music makes the people come together /

Music mix the bourgeoisie and the rebel.”

Madonna

Just as in Madonna’s song, in which music brings people from different backgrounds together, today’s organizations mix professionals with different areas of expertise to innovate. Contemporary organizations need to master cross-disciplinary collaboration and continuous innovation (Edmondson 2012a). The question is, however, through what and how do they collaborate? The fashion designers whom we researched in our ethnographic case thought of fashion as something that could achieve this collaboration as a social force. They founded their own brand, *Os Burgueses*, to bring people together through fashion, akin to the way that music does in Madonna’s song.

The key research question for our investigations is the role of materiality in bringing people together (to collaborate). Barad (2003, p. 801) recently stated that in contemporary research we now know that

“Language matters. Discourse matters. Culture matters. But there is an important sense in which the only thing that does not seem to matter anymore is matter.”

In this paper we will show how ‘matter matters’ in the collaboration of experts to produce and present a seasonal fashion collection.

Leonard-Barton (1995) declares that most innovation happens at the boundary between disciplines and specializations, a place where tensions can be transformed into creativity

(Kessler and Chakrabarti 1996). A fashion collection put together by designers is both a highly innovative and highly collaborative enterprise. Each season must have a different theme, different fabrics, cuts, styles, and look. Fabric designers, makers, cutters, stylists, event coordinators, model agencies and many others, all play a role in putting a show together. What appears on the catwalk, as well as having the designer's signature imprinted in it, pays silent homage to the teamwork of many unseen collaborators. Edmondson (2012a, p. 24) discusses a process named "teaming" that is a "way of working that brings people together to generate new ideas, find answers, and solve problems."

The firm in our ethnography is a fashion brand that consists of a team of designers who produce two seasonal collections per year. They collaborate with temporary members in their design team and various outside experts who are drawn in at any stage of the collection's development. The case allows us to observe teaming practices in a context where materiality is inherent in every part of the product's development, where resources such as time, personnel, and input materials are scarce and precious. Ethnographic work is increasingly attendant to visual data (Emmison et al. 2012) and visual data play a key role in this paper. Our ethnographic inquiry in the context of a fashion design firm results in a strong visual component to the research. The insights from this study in the field of design promise to be relevant to other industries of small scale product development because an effective use of the knowledge of teaming can benefit small firms even more because it allows them to draw in specialist knowledge whilst dedicating limited resources to it.

We apply knowledge on teaming with theoretical concepts of infrastructure, boundary objects and epistemic objects in an ethnographic case study of a fashion design brand to answer the following research questions: What objects are used in creative collaborations including teaming practices? How do objects mediate chaotic situations in creative collaborations? Can a comprehensive view of objects improve teaming practices? Sociomateriality and the role of

objects are gaining ground in research on innovations; however, to our knowledge, it has not been specifically applied to the teaming literature. We address this gap in knowledge by looking at the role of objects in teaming in product development in an empirical study.

The paper is structured in the following way: First we review and articulate the literatures on teaming, sociomateriality, boundary objects, and epistemic things. Second we describe our case and the ethnographic method used and supported by visual data. Third we present our results from the collaboration of experts in producing a fashion collection and show. Fourth our findings provide insights on teaming processes, the use of objects in teaming, and contribute a model on how an effective use of objects can unite individual and shared goals and facilitate coordination. Fifth we conclude with recommendations for practice and further research.

## **SOCIOMATERIALITY, BOUNDARY OBJECTS AND EPISTEMIC OBJECTS**

We first review the contributions of research on “teaming”, i.e. ad-hoc teamwork of experts across boundaries. Then we unite the theoretical concepts of sociomateriality, boundary objects, and epistemic objects to gain insight on their interactive dynamic because we assume that an understanding of the role of objects, when they act as infrastructure, communication facilitating devices and drivers of the collaboration of experts, is able to advance knowledge on teaming practices in collaborative product development.

### **Teaming**

The gerund, teaming, refers to the activity of building short term teams of experts, collaborating on a specific project across boundaries, and dissolving the team when the task is accomplished. Edmondson (2012b, p. 72) has written about an example of teaming, the collaboration of four construction/architecture companies and numerous sub-contractors for the Water Cube (water sports facility) at the Beijing Olympics. “The goal was clear,” insofar as the attributes of the

building, the time frame, and costs, had been specified; however, “how to do all that was less clear” (p. 72). The solution was found in an activity labeled as “teaming”: flexible, temporary teamwork across boundaries (Edmondson 2012b). Building teams of people from different geographical, occupational, cultural, and hierarchical backgrounds creates new challenges that go beyond disciplinary expertise involved in design and construction (Edmondson 2012a). Each expert brings an expertise and perspective from his or her field to the task (Galbraith 1977, Kanter 1988) of working towards a broadly shared goal (Edmondson 2012a). The team is not a static entity (Edmondson 2012a, p. 35):

“The team boundaries may be porous. Individuals may join and leave the project at different points during the process, and roles for individual team members may shift as the project progresses. Many tasks must be defined, assigned, and improvised on-the-go.”

Effective teaming has to be able to respond to fast changes, high competition, and unpredictable customer needs (Edmondson 2012b).

The tasks of teaming work are often characterized by high time pressure, so the faster team members fit into their roles and are able to collaborate, the greater the chances of success. Professionals leave as soon as their specific task is accomplished. Edmondson (2012b, p. 76) describes the “hardware” of teaming as the “technical issues of scoping out the challenge, lightly structuring the boundaries, and sorting tasks for execution.” These points are usually carried out with the help of objects. Not all tasks have to be executed in a collaborative manner for the work to be teamwork. Edmondson (2012b) identifies a sequential interdependence in teaming: material or informational input is needed from one another. This is followed by reciprocal interdependence, a back and forth communication process that is considered critical.

Although teaming refers to groups of people working together temporarily, we extend this definition by including the common case of “bounded” teams with stable members (Hackmann 1990) that draw in specialist when their expertise is warranted. The work structure typical for teaming can easily lead to chaos when communication and coordination do not flow smoothly. The firm in our case is confronted by teaming challenges, and we observe how the professionals overcome the boundaries and challenges of teaming. The designers are “teaming” for almost every phase of the collection’s production, within their design team and with outside contractors, showing a high level of interdependence and collaboration. Their collaborative work, closely observed, allows us to fill the gap of how teaming takes place in collaborative product development and what role objects play in it.

So far teaming has only been analyzed in large-scale collaborations with big budgets, in megaprojects such as the Water Cube, or in complex environments such as hospitals in which high risks are involved in the intersection of myriad disciplines, bodies and hand overs. A case from the fashion industry is inherently different in many aspects, including a reduced task complexity that is, however, compensated by the high degree of creativity in the work, which heightens the degree of flexibility. The work of design means that occupational, hierarchical, and temporal boundaries are constantly entangled, leading to many unpredictable and unforeseen outcomes.

### **The role of objects**

The importance of collaboration in innovations in design, engineering, marketing, or research (Edmondson 2012a) needs to acknowledge more fully the role of materiality in organizational change (Leonardi and Barley 2008, p. 171; Orlikowski 2007; Suchman 2007). Research on teamwork has been carried out for almost half a century (Edmondson and Nembhard 2009) although the facilitating role of objects as actants in teamwork is less evident. To find out “how experts from various disciplines collaborate *in practice*” (Nicolini et al. 2012, p. 612, italics in



original) we include the roles that objects perform (Orlikowski 2002). We adopt a practice perspective and emphasize the role of material agency because as Tsoukas (2010, p. 47) states, “process research has focused too strongly on managerial agency at the expense of other actors.”

According to Nicolini et al. (2012) objects fulfill at least three types of functions in the collaboration of experts: providing infrastructure, enabling communication across boundaries, and motivating the collaboration. Edmondson (2012a) refers to boundary objects and the need for specific goals in teaming. Objects, being ascribed a performing role in collaborations, are therefore the focus of this in depth qualitative study of a creative collaboration involving teaming practices.

Nicolini et al. (2012, p. 625) synthesize research streams on materiality in an analytical framework: material infrastructures form an ecology of supporting objects, boundary objects act as translation and transformation devices, epistemic objects motivate cooperation and attachment, and activity objects hold together knowledge and trigger innovation. The framework helps us to gain a detailed understanding of the role of objects to be able to outline their current and potential functions in creative collaborations. Nicolini et al. (2012) point out that further research is necessary to explain how objects fulfill certain roles, change roles and what effects this has on collaborations. We address this research gap in our study on objects in teaming where we not only focus on the roles of people but also objects. Below we describe in detail the functions of objects as infrastructure, boundary objects, and epistemic objects.

#### *The performing role of infrastructure*

According to Orlikowski (2007, p. 1435) the field of organization studies “has traditionally overlooked the ways in which organizing is bound up with the material forms and spaces through which humans act and interact,” stating that organizational practices are always

connected to materiality. Orlikowski (2007) includes material objects in human interactions. The recent stream of research on sociomateriality addresses this by examining how materiality is part of everyday activities (Orlikowski and Scott 2008). Sociomateriality seeks to “decenter the human subject” (Orlikowski 2007, p.1437) by including objects into research of organizational practices. Orlikowski and Scott (2008) emphasize that the notion of performativity is a central idea in sociomateriality (Barad 2003). Performativity is different from performance because it refers to enactment. Therefore, when people in organizations use objects in their interactions, these are ascribed a performative role (Orlikowski and Scott 2008). Gherardi and Perrotta (2013) found out that materials are active in the dynamic interactions that make ideas take on shape. Objects are active rather than static because they mediate relations and the processes of interactions. They are performative because they can be “actively and materially constructed (‘performed’)” (Orlikowski and Scott 2008, p. 461). We refer to objects that perform the role of infrastructure, including bricolage as a term for using known resources in new ways (Cunha and Chia 2007, Levi-Strauss 1967). The focus is on the objects of daily use, the “boring objects” (Star 1999) which “combine to structure, anchor, and enable collaborative work” (Nicolini et al. 2012, p. 614). Many of the challenges encountered in the case are of infrastructural and/or material nature, such as when more space on the table is needed, when there is no sharp pencil, or when a certain fabric is not available.

### *Boundary objects as communicative bridges*

Boundary objects are material things that allow their users to communicate across boundaries. Star and Griesemer (1989) first introduced the concept of boundary objects in a paper analyzing the role of coordination in the opening of a museum. To found the Museum of Vertebrate Zoology at the University of California, Berkeley, people with different backgrounds had to work together, specialists such as biologists and museum administrators, as well as involved amateurs. The authors define boundary objects as things that can have different meanings for

participants, allow heterogeneity and cooperation to coexist, and have interpretive flexibility (Star and Griesemer 1989). Boundary objects give structure for informatic and work process needs. As boundary objects are dynamic between ill-structured and tailored uses, different groups can work together without consensus, using 'organic infrastructures' (Star and Griesemer 1989). They are the 'stuff of action' that resides between social worlds, and therefore can be vague but useful (Star and Griesemer 1989). Star and Griesemer (1989) give a list of four kinds of things that can function as boundary objects: repositories, ideal type things, coincident boundaries and standardized forms. Other researchers (Star 2010) have largely picked up on the property of 'interpretive flexibility' pertaining to boundary objects embedded in the design and embodied on the fashion model. Examples of boundary objects are prototypes, models, and drawings.

Carlile (2002) has taken the sociological concept of boundary objects into an engineering context and the management literature. He shows how boundary objects can facilitate knowledge sharing across functional boundaries. Carlile (2002) explains how the right kind of prototype allows people from different departments to communicate and align their needs. According to Carlile (2002, p. 442), boundary objects can be "described as a means of representing, learning about, and transforming knowledge" in innovation and product development. This is relevant at occupational boundaries where "each profession has its own language, terminology, beliefs about relative importance of performance attributes, approaches to learning, mechanisms for information exchange, goals, and reward structure" (Edmondson and Nemhard 2009, p. 128; see also Dougherty 1992; Lawrence and Lorsch 1967).

The knowledge sharing aspect of Carlile's work is relevant to us because the creation of a fashion brand requires making tacit knowledge explicit to show skills and ideas. Edmondson (2012a, p. 210) acknowledges the relevance of boundary objects as tangible representations of knowledge to teaming: "Research has shown that the challenge of occupational boundary

spanning can be mitigated through the use of what are called boundary objects around which diverse groups can coalesce.” Whereas previous literature has identified the ability of boundary objects in making tacit knowledge explicit across functional boundaries, our study looks at their capacity to enable communication around the “vague, if ambitious, goals that require experimentation, trial, and error, and collective brainstorming” (Edmondson 2012a, p. 35) that are characteristic of new product development in design, engineering, and science.

O’Mahony and Bechky (2008) enhance boundary objects by the concept of boundary organizations. Boundary organizations allow people to collaborate because they can unite common interests and allow diverging interests to persist (O’Mahony and Bechky 2008). The authors pay attention to the processes and mechanisms through which this happens, including requiring “participants to make lasting decisions about key organizing domains, such as governance” (O’Mahony and Bechky 2008, p. 453). The function of a boundary organization can be fulfilled more easily through the use of epistemic objects and teaming processes.

#### *Epistemic objects as drivers of collaboration*

“Collaboration is a way of working with colleagues that is characterized by cooperation [...] and shared goals” (Edmondson 2012a, p. 54). The objective, or goal, of collaborations in product development is an object that is reached when the team decides that the final product meets the specified criteria. In the process of collaborating to achieve shared goals, objects fulfill the function of epistemic things (Rheinberger 1997) that play a role in motivating the creation of something that does not yet exist, to develop something that has not reached its final form, and inspiring and materializing thought. Such objects of expertise can have the function of triggering and driving a creation process (Knorr Cetina 1997). Activity objects act as organizers and motivators around which the community revolves/evolves: “Collective action is inherently object oriented and the pursuit of some kind of object(ive) is what motivates

collaborative work” (Nicolini et al. 2012, p. 614; Miettinen and Virkkunen 2005). Epistemic things have an open-ended nature and an emotional holding power that creates attachment.

As objects of enquiry and pursuit they are characterized by lack and incompleteness (Ewenstein and Whyte 2009). When experts collaborate to innovate, their wants are directed towards a material object, often expressed as an intermediate representation. Knorr Cetina (1997) explains that objects take on a binding capacity and integrate regimes of expertise, offering valuable insight into how we should approach the relationship of expert workers with objects: “I suggest that we can theorize experts’ relationships to objects more through the *notion of lack, and a corresponding notion of wanting*, than through positive ties and fulfillment” (p. 13; italics in original). Objects of expertise are always changing when they are being materially defined. We emphasize the material definition processes and changing nature of objects: “The defining characteristic of this kind of object, from a theoretical point of view, is its changing or unfolding character – or its lack of ‘object-ivity’ and completeness of being, and its non-identity with itself” (Knorr Cetina 1997, p. 15).

Previous research calls for better understanding of the active role performed by objects (Nicolini et al. 2012, Carlile 2004, Okhuysen and Bechky 2009, Orlikowski 2007). Following this lead we identify the micro-processes of collaborative product development and clarify who uses which objects, when, and for what in teaming.

### **Putting materiality into teaming**

Edmondson (2012b, p. 76) states that a common management error is “subjecting highly uncertain initiatives to traditional project management tools that cope with complexity by dividing work into predictable phases such as initiation, planning, execution, completing, and monitoring.” However, with management tools that incorporate the flexibility required in teaming, the translation from complex work into specific, allocated tasks can be achieved.

Materiality is important to the coordination practices of teaming because common work process problems consist of “disruptions that impede task completion, often due to shortages of material, skill, time, or to other sources of interference” (Edmondson 2012a, p. 35). Such material shortages are a problem addressed by infrastructural objects.

While the teaming literature refers to the need for epistemic objects that unite collaboration efforts it acknowledges that a lack of “clear, shared objectives also inhibits the effortful behaviors that comprise teaming” (Edmondson 2012b, p. 62). An aspirational purpose (Edmondson 2012b) has the power to motivate professionals to overcome boundaries. Boundary objects help them to apply resources effectively by enabling collaboration across boundaries and reach the people who have the necessary knowledge and information (Edmondson 2012a). Therefore,

“In a complex teaming effort, individuals and subgroups have many small goals to achieve along the way (...), but sharing an overarching or “superordinate” goal (...), helps motivate people to communicate thoroughly and carefully.” (Edmondson 2012a, p. 212)

The teaming literature refers to the roles of objects on the levels of infrastructure, boundary objects, and epistemic objects. Therefore we aim to fill the gap of understanding the role of materiality in teaming by looking at how the experts in our case collaborate, using objects in teaming processes to do so. Different viewpoints that have to be united in collaborations stimulate creative thinking (Edmondson and Nembhard 2009). Fashion design, by definition, involves processes that are creative.

## METHOD

In this section we describe the research setting, the ethnographic method used and why we consider it relevant to collect visual data to answer our research questions on the role of materiality in teaming.

### Research setting

*Os Burgueses* [The Bourgeois] is a Portuguese fashion design brand. Designers Eleutério and Mia founded it in 2009 and have since produced seven seasonal collections and participated in four editions of the national fashion week *ModaLisboa* (referred to as “Fashion Week” in the paper). In 2011 they received the *Award for Best New Talent 2011* from Fashion Awards Portugal. In 2012 they were nominated for the Style Golden Globe, a national TV award. The work of *Os Burgueses* has received attention from the international fashion and lifestyle press, Portuguese *Vogue*, national newspapers and design magazines. The designers draw inspiration from society: ideas are transformed into stories that the designers write themselves and then materialize in their collections. This way, each collection is an act of a story that they call “opera”. Each season’s design shows the evolution of a story that is meant to visualize the development of all people/society. This is represented in the collections by a new combination of materials, shapes, and colors. The collections themselves are presented in various forms: runway shows, photos, videos, a shop. The name *Os Burgueses* is an analogy that refers to the bourgeoisie of the Renaissance époque. As in the bourgeoisie of past times, *Os Burgueses* aspire to revolutionize fashion, art, thinking, industry, and commerce.

We chose this organization because we wanted to observe collaborative material innovation processes. Teaming as a specific aspect of collaboration only came up during our data analysis because we were looking for a way to make sense of this spontaneous collaboration of experts. In fashion a team of experts pays attention to every detail in creating the design that is the product outcome: designers, producers, seamstresses, stylists. The collaboration of mainly

creative professionals occurs in a tough, competitive environment where the product is easily substitutable and new entrants have to fight for legitimation. The brand *Os Burgueses* is led by two designers who build a team with interns where everyone contributes. Additionally, they closely collaborate with outside experts who are called in at different stages of a collection's production, e.g. stylists, photographers, sewing factories. This allows us to observe collaborative processes within a homogenous team as well as across functional boundaries. In fashion design ideas can only be expressed through objects: communication relies on expressing thoughts through pictures, drawings, samples and models, rather than language and text. The case benefits from the heavy reliance on objects at every stage of the collection's production and presentation.

During our ethnography we came to appreciate that the production of a collection is ultimately the production of a performance. The presentation of a new seasonal collection in a runway show is what differentiates 'fashion' from 'clothes'. The work on the collection is an interwoven web of collaboration by experts, with a core team of designers and a constant coming and going of outside collaborators who fulfill specific tasks. Our case allows us to observe the work in a stable and established team where trust has been built between familiars as well as first time encounters taking place in collaboration. In fashion as a creative industry, many situations are "complex and uncertain, full of unexpected events that require rapid changes in course" (Edmondson 2012b, p.75), allowing us to observe instances of "teaming".

### **Research design**

Data collection took place in the form of ethnography: The first author followed the production of a seasonal collection that took eight months from idea generation (February 2012) to presentation at Fashion Week (October 2012) and being photographed for marketing. Some occurrences, such as photo shoots and fashion shows, were observed twice because the start of making one collection overlaps with finishing another (one show in March 2012).



In our data collection we focus on the interaction between the material and the social because “when studying the co-evolution of the material and the social, it may make more sense to follow the technology,” (Leonardi and Barley 2010, p. 167) to involve “charting patterns of use, interaction, and organizing” (idem). We aim to stay close to our ethnographic data to make sense of our results and resist high-level abstractions in our theories (Van Maanen 1979). Meyer (1991, p. 219) suggests “in gathering data, we almost always limit our subjects to counting, talking, and writing.” We differ: following a recommendation by Ray and Smith (2012, p. 291) we combine ethnography with photographs because they are “especially well-suited for research on organizational processes and particularly on any process traced across an organization or set of activities” (Ray and Smith 2012, p. 292; Buchanan 2001; Heisley and Levy 1991; Petersen and Ostergaard 2004). Whereas visual methods have been prominent in sociology and anthropology, they have so far been underrepresented in organizational research (Buchanan 2001, Harper 2002, Kunter and Bell 2006, Meyer 1991, Ray and Smith 2010, Vince and Warren 2012, Warren 2009). Photographs have the advantage of capturing organizational reality when “words alone are inadequate to capture the field experience” (Ray and Smith 2012, p. 289; Bateson and Mead 1942; Harper 1994). The strong graphic component is critical in this type of work because the talk of the participants revolves around visual materials. We aim to use photographs in our results in a way that contributes to theory elaboration.

### **Data collection and analysis**

Data consist of 130 pages of ethnographic field notes from a total of 160 hours of observation, informal interviews, and 878 pictures. Field notes were typed within 24 hours after their collection. Our interest in analyzing the data is in the role of objects in the processes of collaborating to create and present the collection. We pay special attention to the intermediate stages which objects go through and categorize them according to the literature into infrastructure, boundary objects, and objects of expertise. In our inductive approach we move

back and forth between the literature and the data and observe where material properties influence human action and vice versa.

In taking photographs we followed a script: on every field visit the researcher took pictures of the collection's development in its various representations, of work-in-progress, of the participants working or interacting, and of the work tools they produce. The results are "photographic diaries detailing production and context issues" (Ray and Smith 2012, p. 292). The participants took pride in being of interest for an academic study and made sense of their role by jokingly referring to themselves as "monkeys."

Meyer (1991, p. 225) suggests that there should be two stages to the process of collecting visual data "(1) encoding information to produce graphic representations of organizational life, and (2) decoding the graphic representations to produce visual data for analysis." We adapt this approach by analyzing the data, both textual and visual, in three steps: First, we seek to answer broad questions such as "Is this part of the process important?" and "Is this process decisive in material or social terms?" Second, we seek to answer specific question such as "What objects are used?" and "What function do the objects used fulfill and for whom?" Third, we represent how the data used to answer these questions corresponds to the literature, answers the research questions, and adds to theory.

## **RESULTS**

In collaborations to make a fashion collection only part of the work happens within a homogenous team of fashion designers. We can distinguish this part of the product development from the teaming processes that take place with outside collaborators who are drawn in to provide their expertise and who leave once their specific task is fulfilled. Teaming occurs at every stage of the eight-month production process of a collection; however, it is most intense

towards the end as the runway show that is to be staged at the national fashion week looms ever closer in consciousness. To explain the role of objects in collaborations we first describe the making of clothes within the relatively stable design team and then the presentation of the collection as a fluid teaming effort.

### **The development of a seasonal fashion collection within the design team**

The design team consisted of two designers who have been working together for five years, and three interns who joined the company for six months to one year. The designers have established their roles within the brand. They assigned tasks to the interns on an ad-hoc basis depending on their skills and work requirements. Although there was high flexibility and an “everyone helps with everything” attitude towards work, we observed that creative and administrative tasks tended to be shared.

Eleutério makes design drawings, patterns, contacts creative collaborators and controls the bookkeeping. Mia makes prototypes, and deals with suppliers, factories, and buyers. As Eleutério said, “We have a clear split.” They took creative decisions together and reserved the right to have the final word in design decisions. Eleutério described the roles in the design process: “The creation works like this, everyone works for themselves, observes, the general story is from me, and then Mia does a research of 20,000 things (pictures, what else?) and we have an idea; everyone in the company contributes, always in a team.” During the making of patterns and prototypes in toile (cheap cotton fabric) Eleutério commented: “I do most of the patterns, Mia does the finishes, I don’t have a head for that.” Mia adds: “When one is better at something, he does that.” The quotes contradict the common misconception (Edmondson 2012b) that teamwork is always collaboration. It is a mix between individual and shared work, between developing and communicating ideas. That is the case in a mature and stable team such as that of the creative directors, as well as in newly formed groups.

The making of the collection took eight months from the development of the concept to being presented at Fashion Week and photographed. Mia explained how much trends, as structures imposed from the outside, influence the creation process:

“Professionally, when we make a collection, we always take into account trends, also because trends and the materials offered are connected. As the focus of our company is the client, we have to understand what he or she asks from us; this is, always within our artistic work, of course.”

Eleutério added to this description of the clients’ roles, who act as invisible stakeholders and the ultimate experts: “[Fashion] brands have holy cows, the clients are our cows, in capitalism the client is the boss; even though you have creative freedom, you design for the client; who buys are the shops.” Here he identified not the final consumer but the commercial re-seller as the client, an expert with whom close relations are established and who is part of the teaming process.

The design team used a calendar to divide tasks and inform them on when they have to be carried out. The tasks include making contact with outside experts, such as ordering from suppliers, taking prototypes to the factory, or photographing the collection. The calendar does not specify the duties of the interns. They are too inexperienced and their membership in the team is too short to take on major responsibilities and be included in a coordination tool.

The designer Eleutério described the process of creating a fashion collection and the connected collaboration with outside experts in the following way: “The collection/fashion is a living organism, the product, the brand; designs come quickly from the general idea; smash: creation is not linear, many people are involved, in the end, the stylists.” The stylists were the first people that crossed his mind when he thought of creating a seasonal collection for a fashion show.

However many different professions are required for the final product to meet industry standards and the clients' expectations.

In the early phase of making the collection one of the designers visited the fabric fair to select and order samples of fabric to choose from later as a team in the studio. In addition to consulting industry magazines that predict trends, Eleutério took the stylist, Lisa, with him to the fair as a substitute for the designer, Mia, who could not come at this time. Eleutério prepared himself for the fabric fair by researching trends and pictures with which to inspire the collection. He used a collage of his ideas displayed in images on his smart phone to show to the stylist and thus to share ideas. Eleutério explained what guided the preparation for the fabric fair:

“We don't come ‘white’, we have an idea of what we are looking for, tendencies, you already know the colors. Colors and tendencies are in Mudpie [an industry magazine from the UK].”

The designer used the expertise of the stylist, a specialist who works full time for a lifestyle magazine, and additionally an outside, material source of expertise: industry magazines that present trends in the form of color tables and photos of people who are considered “trendsetters”. On one occasion Eleutério explained, to a child visiting the studio, “There are books which tell us what will be fashionable next year and this is where we take our inspiration.” Such prepping (Carlsen, Clegg and Gjersvik 2012) presents a new aspect to teaming, the consultation of material resources produced by specialists who are anonymous people considered experts by an outside authority, who do not know directly of their role or participation in specific creative processes.

At the fabric fair, the stylist advised on colors and fabric properties by spontaneously commenting on what they came across. The designer and the stylist looked at the exhibition in the morning. Preferences and dislikes were pointed out. At lunch they went through the

industry magazine and discussed what they liked from what they had seen. By now the designer and the stylist were able to talk about colors without pointing. Spending a morning looking at fabrics and color tables established a “common ground” (Bechky 2003) so that they both knew which nuances of a particular “mint” color they were talking about. The boundary objects of pictures and things quickly became obsolete after this collaborating in using material resources.

The goal of the visit to the fabric fair was achieved when samples were ordered. These arrived at the studio a few days later and the designers decided which ones they wanted to use for the collection. The decision was based on factors of trends, quality, and cost. No outside experts were included in this step, one that was repeated several times because certain fabrics or colors were not available. The fact that the decision of what to order was made within the stable design team is due to geographical, temporal, and hierarchical boundaries: the stylist was not in the studio when the order was placed, which needed to happen fast because of the seasonal demand for and availability of fabrics. The interns lacked the experience, creative maturity, and authority to have any say in such a major decision. Additionally, the designers considered it their sole discretion and creative duty to make the final decision on which colors and types of materials the collection would consist of. The collection was personal – it must reflect the designers signature so that when asked “who are you wearing” fashionable people could say “*Os Burgueses*, of course!”

Although the aim is to produce designs that elicit the desire to be bought, displayed and worn, when summing up the tasks of a fashion design brand, Eleutério stated: “Forget fashion, it’s there, at the side, you do 1001 things,” meaning that designing the collection is only one out of a set of many tasks that have to be completed, by teaming with experts, to reach targets and create the final product.

## **Teaming with outside collaborators**

The design team collaborated with outside experts at every stage of the design process. The following sections outline the kind of teaming that took place and what objects played a role in it.

### *Suppliers*

A supplier of the brand's zips emphasized his firm's efforts to innovate together with their customers:

“We collaborate with universities and firms for innovations. We are a much dispersed company and try to produce locally, co-develop trends, to offer what designers need.”

Effort to establish close co-creation processes and long-term ties was not matched by all suppliers. As the designers stated, they wanted to source their fabrics from national producers but were unable to do so because the mark up for lower quantities was “readily 50%.” In addition to high cost, fabric supply was frequently unreliable and caused several changes to the collection's final look. In one instance, the designers kept waiting for the supplier to tell them which colors of a particular fabric were going to be produced, only to have to abandon the design completely because it took too long to receive a definite decision. One designer said: “All efforts for that fabric failed.” Relations between the brand and fabric suppliers have not been looked at from a teaming perspective and do not show the same level of interest in creating a win-win situation as with the zip supplier.

There was an incident where the collaboration with an outside expert supplying patterns in different sizes went wrong and had drastic consequences. Typically a prototype is made in European size 36, the industry norm, and then a pattern maker, a specialist who has the skill and machinery, makes patterns in all sizes from a prototype. The pattern maker in this case got

the scheme wrong. The clothes for the corporate customer had to be redone by hand in the studio (the first version was made in the factory) shortly before Fashion Week. The results were financial losses, increased time pressure on the designers as well as damage to the reputation of the brand. Teaming is not always easy when there has not been time to establish relationships and collect proof of expertise.

### *Factories*

When the designers finished making prototypes in toile in the studio, Mia took them to the factory where the dresses are cut and sown in the original fabric. Mia stated that, “the factory makes better finishes and saves time; it’s the best sewing quality.” Prototypes came with a cover sheet that explains what materials to use, provides comments, accompanied by a transparent envelope containing the patterns. This set can be seen in Image 5.



**Image 5: Dress in toile with cover sheet**



Prototypes go to the factory in toile (cheap cotton fabric), with a cover sheet and patterns in the back of the transparent envelope.

After the collection was finished the designers believed that communication with the factory and its seamstresses needed improvement. Prototypes and patterns seemed not to provide enough information to make sure that pieces were made according to the specifications. The seamstresses had forgotten details and the seams of skirts were not coherent throughout the collection, requiring last minute re-work of pieces in the studio.

## *Music*

The designer Eleutério emphasized the importance of the right song for presenting the collection: “When we work on the runway show, we are always thinking of the music.” He had an electronic sound in mind when he approached the composer of the music for the runway show: “It will be an industrial sound because the collection has to do with an industrial futurism.” Getting the music right was important for the designers: the clothes have a futuristic look that needs to be supported by the performance of the runway show in which music is an essential part. Eleutério described the collaboration in making the music:

“There are annoying sounds for the ear, you know, that chaos. [...] [The composer] will find the sound if it’s missing, it’s impressive. I say there is something missing, a laser, and [the composer] puts it in. When I am with him it’s a lot faster than, send a version, send another.”

Eleutério mentioned the benefits of physical proximity in this example. Whereas they have been exchanging versions of the music over email for several weeks, a single meeting in person was enough to finalize the piece. The singer commented on the teamwork: “This was the first production in a team, they explained what they wanted, we tested it, where I should sing higher for example, we recorded it four or five times and then mixed what was good.” As the example shows, when highly specialized professionals collaborate, they do not need experience in teamwork per se. Boundary objects such as the recorded music serve to enable the communication between the experts and reach the desired result. The experts in music are able to achieve their own objectives whilst working towards those of the brand: the composer hopes that his song will be played in a club and the singer plans to put a part of the song on his next album.

## *Production*

The producer is part of the creative as well as an administrative team: he identifies jobs and allocates people to their tasks, books spaces, organizes props, makes sure supplies are there, and oversees the production. Although the producer acts as a manager he needs to be an expert in the fashion industry: in addition to the role of overseeing the event he contributes his expertise to sub-groups in the collaboration and consults the designers in the areas he manages. When the designer Eleutério explained to the producer what image inspired the music: “A doll, without expression, a mechanic walk, confident, not flowing (does up and down step) [...], not too slow or fast,” the producer commented: “Maybe you write a line on how to walk because the music pushed me to walk like this (does a dancing walk).” The producer thinks about the practicalities of how to communicate the walking instructions to the models. These discussions and reflections lead to a sign being made and put up at the entrance of the catwalk reminding the models of the way to walk the show. During Fashion Week the producer of *Os Burgueses* simultaneously had a managerial role for the Fashion Week organization and therefore was not available on the day. Another producer did not substitute for him but his tasks were shared amongst the design team, leading to some chaos and a lack of awareness of who was responsible for what. Due to this chaos the team almost forgot to distribute cards to the audience that served to promote the collection to the viewers of the runway show. The cards had a QR code so that people with a smartphone could scan it and follow stories that were delivered in real time from the back stage shortly before the show.

## *Hair*

The creative directors met casually with the hair stylist a few weeks before the show and talked to him about the idea: the men’s hair was to be inspired by a futuristic view of industrialism and an artificial intelligence film, while the women’s hair was to be inspired by a helmet. The

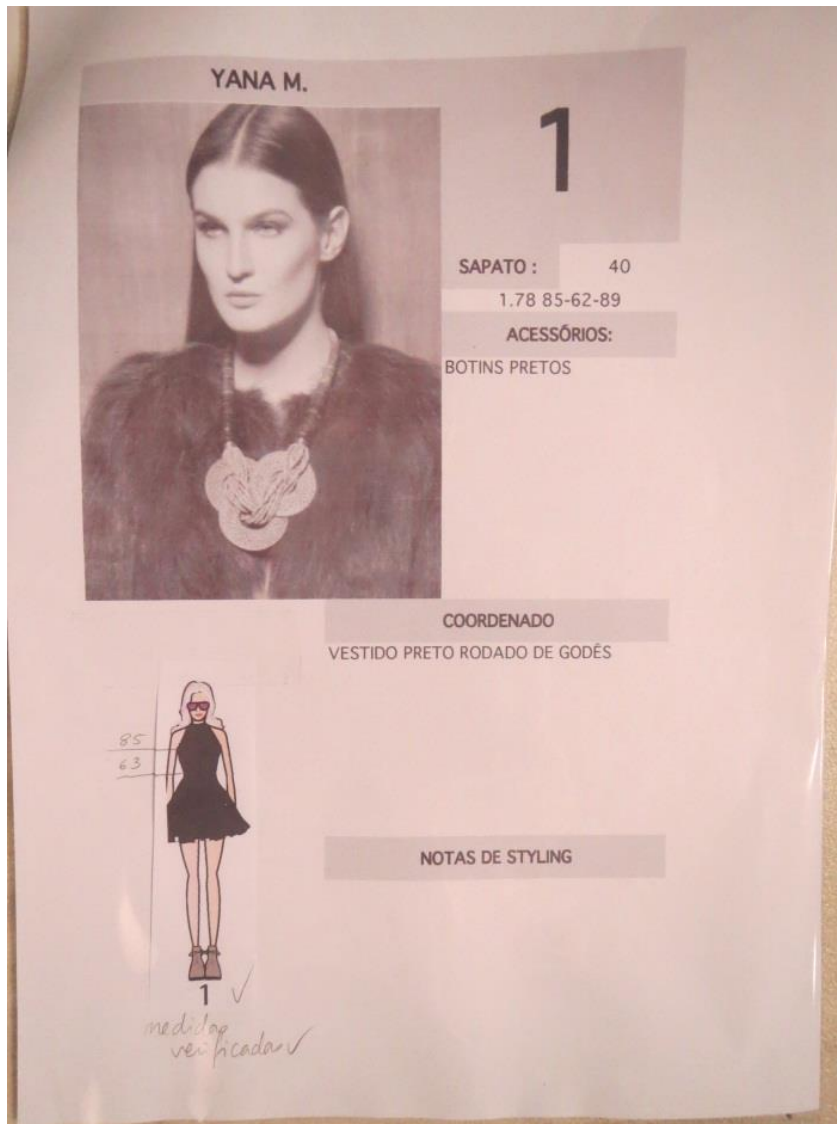
designers and the hair stylist agreed that he would test the styles with models in the salon and send pictures to the designers. Mia stated: “There is no need to meet, the idea is well defined.” A problem arose a week before the show when the stylist Chris picked the models and sent digital versions of their portfolios, called comp cards, to the designers. One male model had long hair. Mia jokes, “We can always do the style of the women” but then gets serious, noting that they “cannot do the hairdo of ‘artificial intelligence’ with gel to the side with long hair, he will look like a gypsy.” She calls the stylist and he changes the model. In this instance where the stylist works as the expert for the composition of the runway show and thus chose the models, he had the brand’s image but not the work of another specialist, the hair stylist, in mind. The model with long hair did not provide the “material input” needed by the hair stylist. Simple boundary objects such as pictures informed the designers of the misalignment and a phone call solved the matter. The brand is the boundary organization for the collaboration of experts (O’Mahony and Bechky 2008).

### *Styling*

“Styling” is the presentation of the collection, i.e. the combination of clothing items, the order of combinations, the order of the models, plus the shoes and accessories they are wearing. The stylist is a professional who advises on the look/style of a brand, person, photograph, or runway show. He or she is an expert on the fashion market and leading trends, often working for magazines such as *Vogue* and is therefore a critical opinion builder. The stylist is responsible for a convincing image, a coherent composition of person, clothes, and decoration, in other words, the “mood” that is being conveyed by fashion. The designer Eleutério explained why he values the stylist’s work: “The stylist has a great eye, he knows all the models, he sees a piece and assigns the model.” The stylists Chris and Lisa came to the studio to do the styling five days before the show. Only a few items had arrived from the factory so Chris and Lisa worked with drawings of clothes to decide on the order and combination of pieces and the assignment

of models to them. The designers recorded the stylists' decisions and made cover sheets for the day of the fashion show. Image 6 shows an example of a cover sheet that includes the model, her sizes, her number in the running order, a picture of the piece of clothing, and space for comments.

**Image 6: Cover sheet**



The image shows an example of a cover sheet that is attached to each combination of clothing. It says the name of the model, her order in the defilé, her sizes, what she will wear (with a picture), and comments on how to wear it.

The drawings were not appropriate boundary objects for the stylists to imagine the clothes' final look. On the day of the show Chris and Lisa came for a re-styling to the dressing room at the Fashion Week site where all the clothing items were now on hangers. The two stylists re-styled the collection and their changes were recorded. This can be seen on Image 7.

**Image 7: Re-styling of the collection**



The stylist goes through the final version of the collection and decides what pieces match, what model will wear which combination, the order of appearance, and the shoes. The designer Mia records everything and new cover sheets are made.

The team took out all the cover sheets that assigned models and running order to dresses. The stylists discussed the time the models had to change from one outfit to another, the hair colors to go with the colors of clothes, and which of the models to walk last. Design intern Sara explains what the stylists pay attention to: “There needs to be coherence: we go from green to black, white, orange.” The stylists apply the rule that,

“The first model is the prettiest, she has a high impact, called the first face, because she wears the first piece everyone will see, it creates the first impression. The last has to be wow; it’s what people leave with. In the middle it’s more commercial, it complements the story.” (Intern Sara)

As the collection was now complete, the stylists were able to make final decisions on combinations and running orders. Two dresses were completely excluded at this stage. One model that was said to be absent at short notice suddenly appeared and was re-included. Models acted as infrastructure in this phase: although they are the experts in presenting clothes, they only fulfil this role later. During the fitting they hardly spoke for fear of offending anyone. The fact that people naturally do not have identical measures caused disruption and was the source of some last minute changes in the scripted running order. The men were so thin that additional holes had to be punched into belts. One dress was too small for the model and the zip had to be substituted by a button a few hours before the show: as one intern said, “I am afraid it will rip.” Not all models fit in all dresses and since the styling took place in the morning and the fitting occurred in the afternoon when the models arrived, the script had to be flexible enough to exchange models. Cover sheets were changed again shortly before the show.

The designer Mia commented on the styling: “Models changed at the last minute, the shoes, then it was chaotic, but peacefully solved, but stressful at the time.” Buying shoes was left to the last days: the shoes that the stylist Lisa had recommended for the collection were not

available in a sufficient quantity, therefore the designers bought a choice of sizes and colors that the stylists could choose from on the last day. The stylist Chris commented: “The shoes are 80s and the collection is not; Lisa’s shoes made the collection sportier.” He implied that the shoes would not support the presentation of the collection as well as they might have. The shoes resulted in problems for the models later, because some were too big: this was fixed with tape in an act of bricolage but not to a satisfactory level – there was some discomfort and awkwardness in walking.

### *Fashion Week*

The designers told how they joined Fashion Week: They sent an email with their work to *Trendland*, a high impact international fashion blog. The day after many national bloggers featured *Os Burgueses’* designs and the director of Fashion Week called to invite them to participate. The start of the success story is a mix of material structures and infrastructures (the collection, the blog(s), Fashion Week), and again teaming with unknown experts, namely the fashion experts at *Trendland*. They benefitted by being able to offer a new brand with a fresh spirit to their followers and the brand gained national and international recognition.

The collaboration with Fashion Week works as follows: the organization provides the space, the models, some of the invitees, and make up. The designers make their collection available, do the styling and arrange for the hair. For the Spring Summer 2013 collection the brand was invited to present on the main stage, an honor and recognition of their success in having been nominated and awarded major design awards. As beneficial as the collaboration with Fashion Week is for the brand, there have been misunderstandings in communication: Fashion Week published the brand’s press release two weeks before the show, instead of one day before. Eleutério was disappointed: “You want to create a tension for the day, tum, PR, Dom Sebastiao [theme of the collection], it was a secret, it’s the brand doing that.” In a phone call between the



designers and the organizers the latter confirmed that they meant to support the marketing of the designers through this step, but without the designers' consensus this was counterproductive. Whereas some designers count on the marketing support of Fashion Week, *Os Burgueses* prefer to be in charge of their marketing activities to communicate with their audience as they see fit, without the interference of, let alone teaming with, Fashion Week.

### *Photography*

After the presentation of the collection in the runway show, the collection was photographed for commercial purposes. The photographer and the design team visited the site of the photo shoot before the shooting. The photographer did not take pictures to experiment with the location, as one of the designers did. The photographer stated: "When I take a camera, it's serious," implying that he had enough experience to be able to imagine the possibilities of the site without taking pictures of it. On the day of the shooting, there was a blanket lying on the floor in front of the photography equipment. When asked why, the photographer answered: "this is so they know where our space is, you know, where I had a stick before, it's the same thing," explaining that he used material objects to keep people out of his "area of expertise," physically. The designer Eleutério and the intern Sara prepared for the photo shoot by trying on the clothes and miming the poses of the models. The collage of the preparation can be seen on Image 8.

**Image 8: Collage with ideas for photo shoot**



The designer Eleutério and the intern Sara experimented with how they could present the collection in a photo shoot. The result is presented in this collage that can be shown to the photographer and the models.

The clothes being photographed in the shooting are a selection from the runway show: the commercial items, i.e. what can be sold, will be photographed. The photographer put the result of the photo shoot in an art magazine. The pictures not only served to advertise the clothes but also to add to the artistic reputation of the photographer.

## Theoretical categories of objects in teaming

We made a table that summarizes what teaming processes took place, with whom, and how objects played a role in each teaming instance. Table 3 discerns between the theoretical categories of objects, namely infrastructure, boundary objects, and epistemic objects, therefore illustrating the diverse functions of objects.

**Table 3: The roles of objects in teaming processes**

<b>Teaming partners of design team</b>	<b>Teaming task</b>	<b>Role of object: infrastructure</b>	<b>Boundary object as communication facilitator</b>	<b>Objective as epistemic object</b>
<b>None</b>	<i>Designing for client</i>	Fabric availability, cost, quality	Trends given by industry magazines	Making the next collection the best collection
<b>All outside collaborators</b>	<i>Coordinating teaming</i>	Internal and industry dates	Calendar splits responsibilities and structures teaming tasks	Effective coordination within and outside the team (teaming)
<b>Industry magazines, strangers</b>	<i>Detecting trends</i>	Collage of research on previous trends on designer's phone	Color tables, photos	Inspiration
<b>Suppliers</b>	<i>Delivery of ordered fabric</i>	Samples corresponding to availability	Order forms	Co-develop trends
<b>Pattern maker</b>	<i>Pattern making in different sizes</i>	Machinery	Prototype in size 36, industry-wide scheme for sizes	Perfect patterns in all sizes
<b>Factory managers, seamstresses</b>	<i>Sewing the collection</i>	Fabric, machines	Prototype, patterns, cover sheet	Achieving the best sewing quality, the best finishes, saving time

<b>Composer, singer</b>	<i>Making the song for the runway show</i>	Sounds, email system	Recordings of music	Song that reflects the collection's theme
<b>Producer</b>	<i>Organizing the event</i>	Space, supplies	Signs, supply list	Not present
<b>Hair stylist</b>	<i>Supporting theme of collection with hairstyle</i>	Models' hair, hairspray, brushes, hair dryer	Pictures that show hairstyle as "helmet"	Reflection of artificial intelligence and industrial futurism in hairstyle
<b>Stylists</b>	<i>Assembling presentation of collection</i>	Models, clothes, accessories	Models' comp cards (incl. their sizes), cover sheets for combinations	Coherent visual composition of clothes and models
<b>Fashion Week</b>	<i>Promoting the brand/national fashion design</i>	Space, models, invitees, make up, manager calling models in sequence	Runway show, script of running order	Presentation of collection that meets clients' tastes
<b>Photographer</b>	<i>Presenting the collection in photographs</i>	Camera, site, collection, models, blanket, stick	Collage of ideas for photo shoot	Commercial and artistic photographic presentation of collection

The table forced us to structure processes according to teaming partners and tasks, which was not always easy because the collaboration can appear interwoven, organic and not always tied to one area of expertise. Allocating objects to theoretical categories shows the relevance of having objects in place at each level to achieve targets: where objects do not fulfill their ascribed function such as in the teaming with suppliers, or where an object category is missing, such as with the producer, the collaboration works less well. The table shows that when effective

objects operate at all levels, it does not matter whether teaming partners see themselves as part of the collaboration or not.

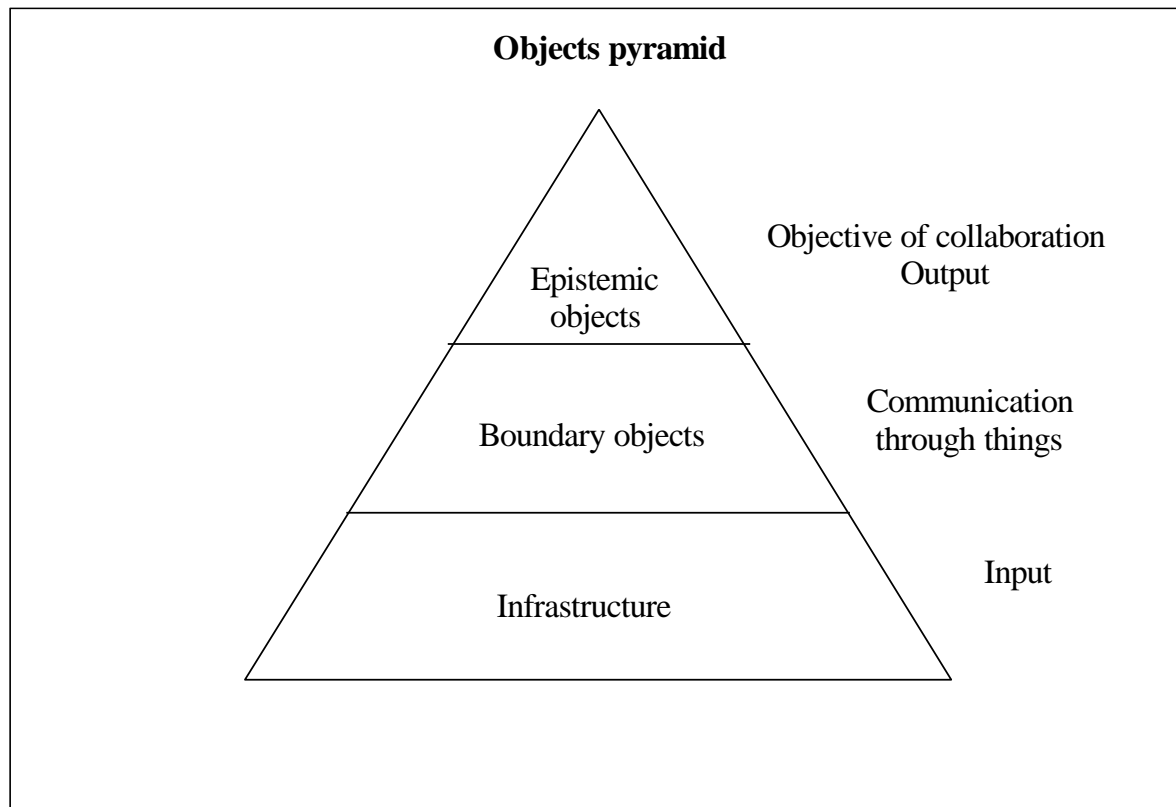
## **DISCUSSION**

Our data show that objects mediate teaming processes in the collaboration of experts towards staging the presentation of a fashion collection. We describe how a differentiated view of objects can be applied to a union of individual and shared goals to achieve the desired outcome through improved teaming.

### **The role of objects in collaborations**

We summarize the findings on the objects used in the collaboration in a figure that combines Nicolini et al.'s (2012) framework with the work objects we encountered in our case. Figure 4 shows where we locate the input, intermediate, and final objects according to the framework.

**Figure 4: The pyramid of theoretical object categories**



The base consists of infrastructural objects, the things that serve as input to be processed and materials to support work. As the data show, these are different things depending on who is using them: Table 1 shows that clothes are the input materials for the stylists' work, whereas they constitute epistemic objects for the designers throughout most of the collection's development. In the middle layer we find boundary objects, the things that enable communication across boundaries to arrive at a final product that conforms to the participants' objectives. Here we find the highest variety of objects, from fabric samples to timetables and prototypes. Almost anything can be a boundary objects as long as it is material and enables communication across boundaries. Star (2010) does not support this simplified interpretation of boundary objects but it reflects what the practical application of the concept has shown us.

At the top of the pyramid there are epistemic objects. These are the objectives of the collaboration, a product in material form that drives people to collaborate. To remain true to the literature that states that epistemic objects are something that does not yet exist, we only categorized ‘structures of lack and wants’ (Knorr Cetina 1997) as primary objects in our results section. We hereby do not align with the trend to classify intermediate work objects such as flipcharts (Jarzabkowski et al. 2013) or visual representations (Ewenstein and Whyte 2009) as epistemic objects. Describing ideal future states/things as primary objects reflects that epistemic things are always something that professionals are working towards and that cease to be defined as such once they exist. Our results show that epistemic things move on to become boundary objects or infrastructure when they are completed: the designers designed the collection, a material target that motivated them. Once it was finished the stylists used the collection as input for their work, combining the pieces to present the brand.

We contribute to the literature on objects the finding that objects change their roles dynamically according to which expert uses them, what the expert’s sub-target is, and the state that the collaboration has achieved. Object categories are not static but continuously redefined. The objects with a built-in flexibility such as prototypes and their attributes are more likely to move between categories than simple artifacts such as color tables.

### **The collaboration processes in teaming**

In our case collaboration takes place on two stages: an intense teamwork within the design team that designs the collection in the design studio and in project-based partnerships with outside collaborators who provide services through their specialist know-how, which is not necessarily contributed in the studio. The collaborations can therefore be regarded as a process that Edmondson (2012b) describes as “teaming”, where experts gather in temporary groups to solve problems. Our case shows that tasks are pre-defined by professionals’ expertise: the coordination of teaming is a minor challenge because it almost solely involves the collaboration

of experts who are experienced in their disciplines and know what to do. Leadership is hardly noticeable: people are guided by their functions. There is respect for everyone's work and trust in capabilities. These findings contradict the teaming literature that in addition to describing the process of teaming emphasizes the role of leadership and fighting fear (Edmondson 2012a).

In addition to reciprocal confidence in collaborators' skills, problems can usually be solved through improvisation (Kamoche and Cunha 2001). An example of this occurred when one dress was too short: this was noticed in a fitting with a model the day before the show. Neither the design team nor the seamstresses had anticipated that the dress might be too short for a model nearly two meters tall (1.80). After the fitting one of the designers and an intern tried to stretch the dress and open the seam, which was not possible due to the material properties of the fabric (leather). Overnight they decided to take off the elaborate decorative garment on top of the base dress, which allowed the base dress to fall down and gain a few centimeters. The stylist immediately praised the new, simple dress the next day. The example shows that when certain boundary objects are missing, such as a fitting doll with the approximate size of the models, product development can miss its target. The properties of material input as infrastructure also play a role: whereas in other dresses that are too tight the lining can be opened and re-sawn, leather does not allow for such readjustments because they would be visible later. The example shows that it is not only important to collaborate towards a shared goal, i.e. an epistemic object, but to give equal attention to having the right boundary objects in place and considering the infrastructural needs of participants and the material properties of inputs. Then objects can fulfill their roles in the micro-processes of collaborations (Nicolini et al. 2012).

Teaming works best when the members of the temporary teams are able to pursue their own as well as the brand's goals in the collaboration (O'Mahony and Bechky 2008). This limits the extent to which shared goals (Edmondson 2012a) have to be common to all collaborators. Just as parts of teamwork are carried out by individuals (Edmondson 2012a) some objectives remain

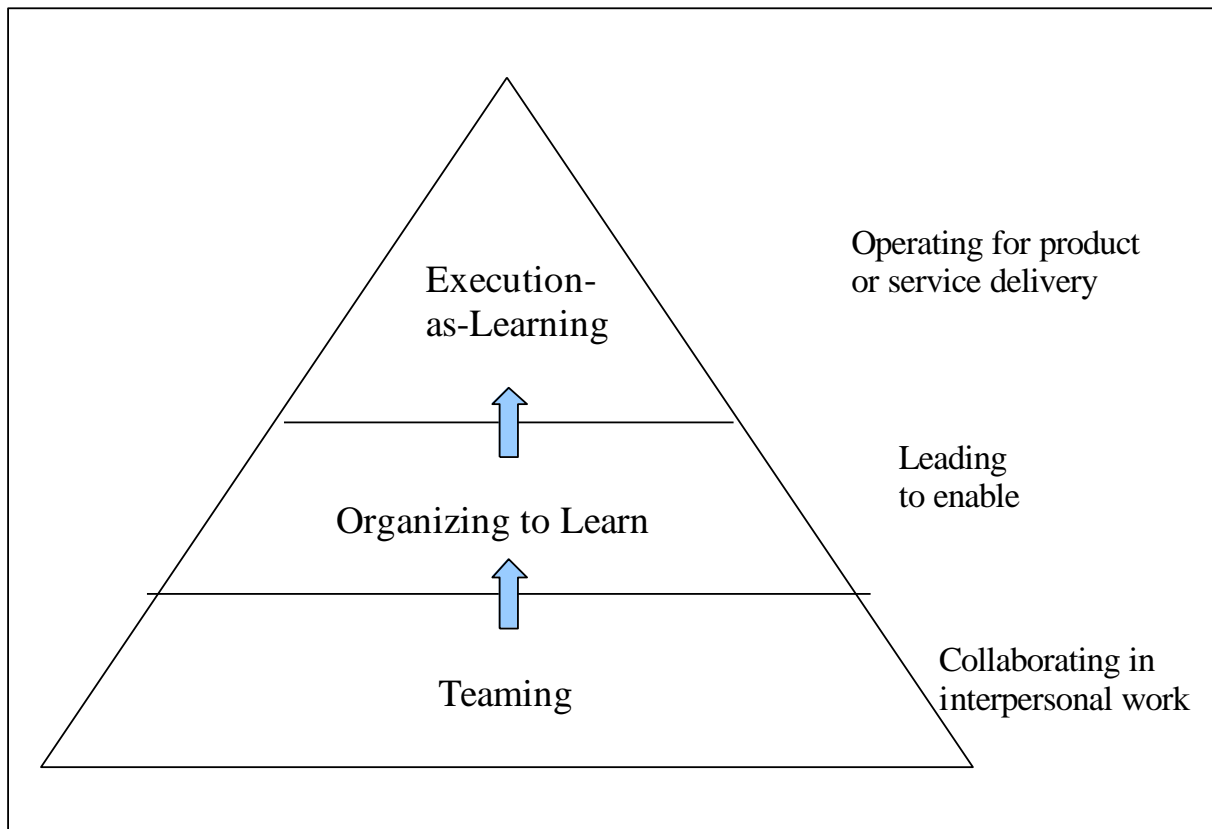


individual; however, the professionals pursuing them, nevertheless, or even more so, contribute to the common target. Our findings confirmed this many times: the intern gaining experience, the composition being played in a night club, the singer adding to his album, the stylist adding to his reputation, the photographer publishing in an artistic magazine. When the first author asked a model why he participated in the show, he said: “to be seen by agencies and get contracted from abroad.” All these collaborators’ individual goals are directly tied to the work they perform for the fashion brand but their outcomes contribute nothing to the teaming goal of presenting a seasonal fashion collection in a runway show at Fashion Week. Our findings push us to go as far as to say that when experts engage in collaboration there is only an overlap of goals but not a common goal. The absence of a common goal is not the handicap or functional hole that managerialist literature assumes.

### **The materiality of teaming**

In *Teaming: How Organizations Learn, Innovate, and Compete in the Knowledge Economy* Edmondson (2012a) presented a pyramid that describes teaming in relation to leadership and execution. We reproduce this pyramid in Figure 5.

**Figure 5: “Teaming as a Foundation for Learning” (Edmondson 2012a, p. 31)**



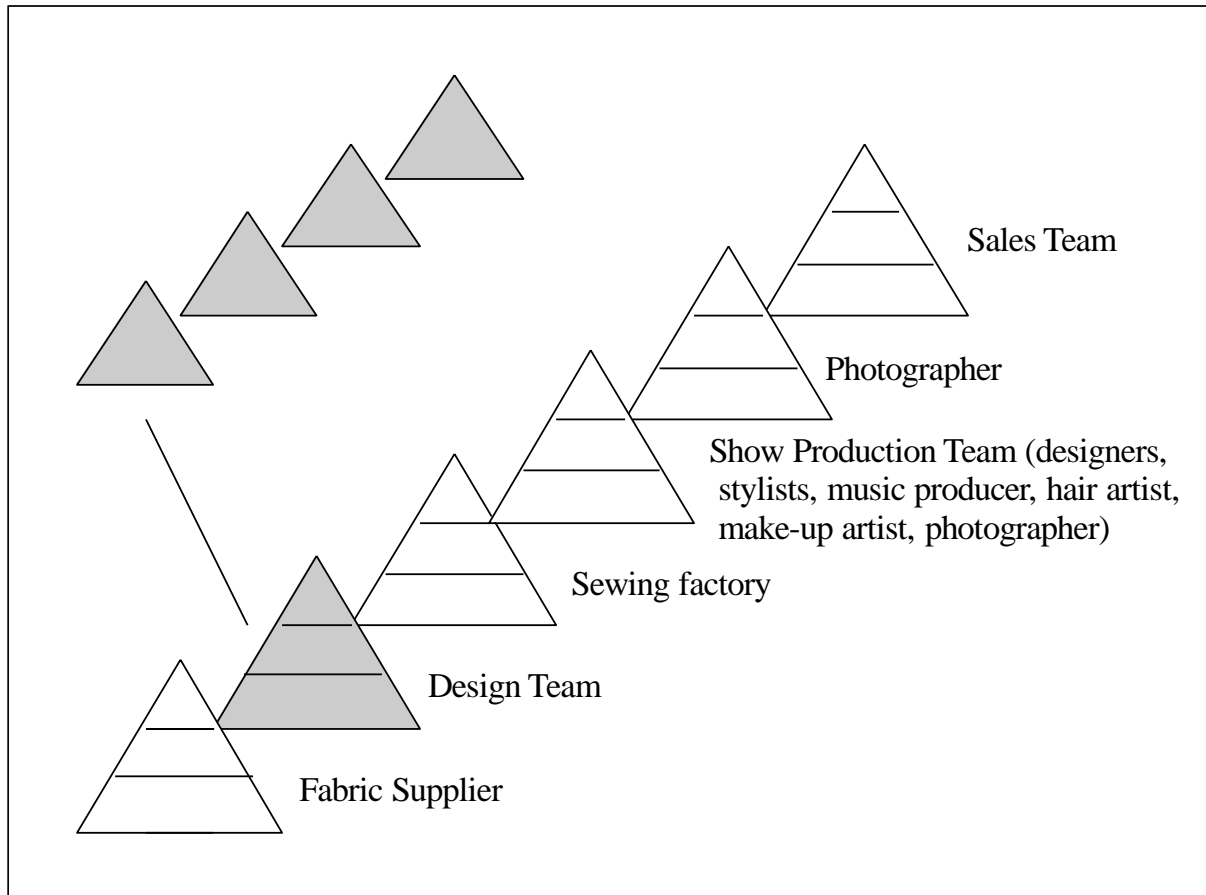
The comments to the right of the pyramid are explanations from the accompanying text. We find similarities between the upward movements shown in Edmondson’s pyramid and our objects in the collaboration pyramid. Edmondson (2012a, p. 79) also describes a pattern of cycles:

“Successful teaming requires four behaviors: speaking up, collaboration, experimentation, and reflection. These behaviors are enacted in iterative cycles. Each new cycle is informed by the results of the previous cycle. Cycles continue until desired outcomes are achieved.”

In the case we can identify such a pattern in the collaboration of experts: our findings show that when we apply the “object lessons” to teaming we encounter a process that looks like a chain

of pyramids within which groups of experts process infrastructural input to reach epistemic objects with the help of boundary objects. Figure 6 illustrates this process in fashion design.

**Figure 6: Chain of Object Pyramids in Teaming**



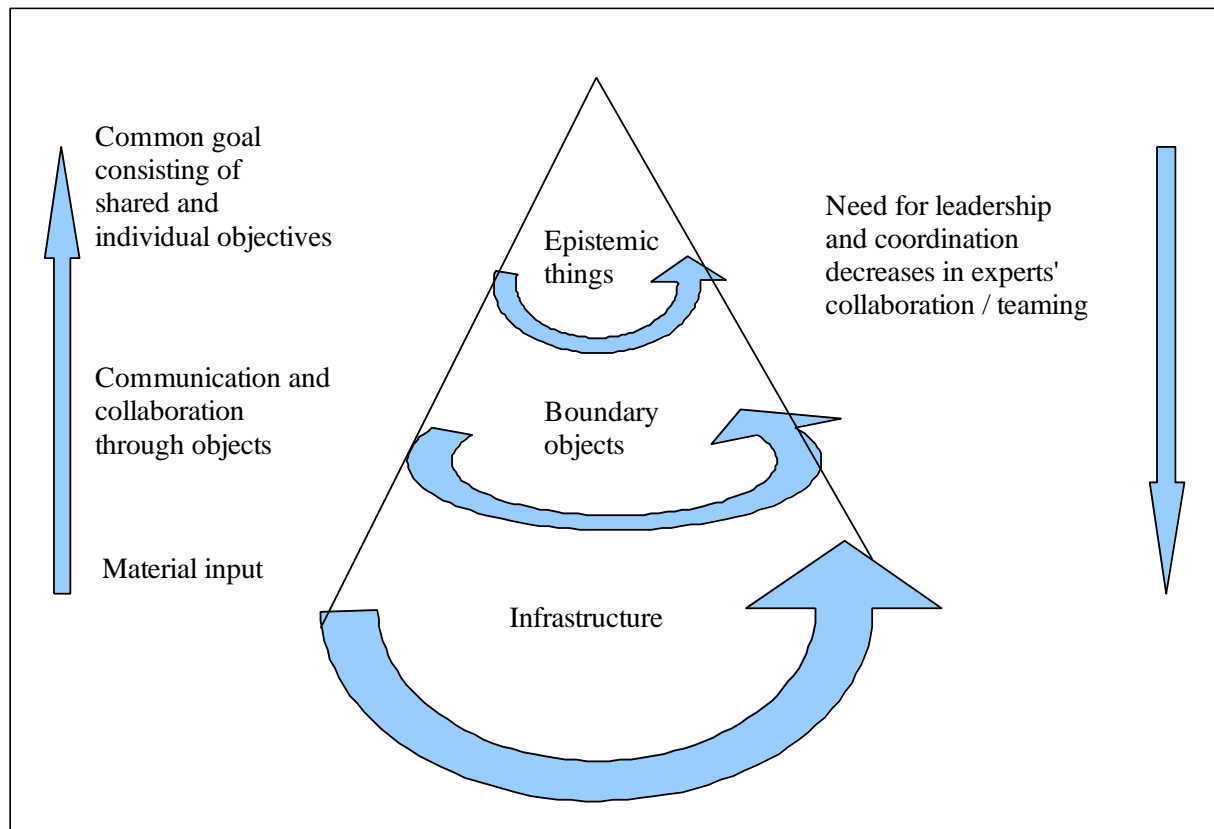
This finding from our ethnography adds flesh to what Edmondson (2012b) describes as the sequential interdependence of material or informational needs. We discovered that the process of collaboration from the bottom of the object hierarchy to the top took place in every work process within the design team and in collaborating with outside experts: the process of input becoming output through communication (in material form) repeats itself in every step of making a fashion collection. Our data show that the tertiary object – boundary object – final object pyramid can be found at every stage of the collection making and presenting process.

The need for a final object is defined and the collaborators work towards it using infrastructure and materials as input and boundary objects to communicate ideas, develop and express thoughts and reach consensus. The interaction on the lower two levels of the pyramid eventually leads to a final object (when the makers are satisfied or when the time limit is reached). In practice this chain is not always linear-like in the figure because frequent going back and forth takes place. Implicitly, in practice there are many more, smaller, pyramids. Hereby we add detail to Nicolini et al.'s (2012) framework: we show how a hierarchy of objects is used in collaboration and outline the micro-processes both within and across teams.

### **A model of object(-ive)s in teaming**

After having found out that shared goals are never completely shared, we use our findings to show how “not completely shared”-goals can still have the cohesive force of epistemic objects to be used to motivate the collaboration of experts. We derive a model from our results that illustrates how a comprehensive framework of theories concerning objects (Nicolini et al. 2012) can be used to design teaming processes more effectively and reduce the need for congruent goals by replacing them with a net of interwoven individual goals spanned by a shared common goal. The result of this is an even lower need for coordination and agreement, facilitating collaboration, leading to better overall results for everyone involved.

**Figure 7: Model of Teaming through Objects. .**



The model in Figure 7 reflects what teaming processes need to look like with respect to objects: everybody's input materials, communication means, and different objectives are virtually connected to everyone else's work. The need for leadership and coordination is reduced however because objects and material needs passively fulfill these functions and direct, active interaction between participants decreases. The collaboration through objects builds a spiral that cumulates in the common goal they are collaborating towards and includes individual goals. The mix of objects that are common and separate is represented in the circular shape of the model. The single steps that experts take in their field remain separate, but their work phases are interconnected in the infrastructure and boundary objects they use and share to arrive at the common objective.

## **Practical implications**

We recommend that managers of traditional industries split their processes into object categories: teams should develop and discuss ideas using objects which resemble the three levels of the hierarchy, i.e. divide them into infrastructural needs, communication tools, and material outcomes which drive the collaboration. Doing this forces members to define exactly what they have, what they need, where they want to arrive at, where boundaries need to be overcome and how to do so. The paper creates awareness that an optimal use of objects is as important as talk and text in the communication of stable team members as well as short-term contributors of expertise. The active use of this knowledge can enable managers to motivate team members, allow them to work more independently, instill a higher degree of within-team and outside control, as well as reach a desired outcome in less time with fewer resources.

## **Boundary conditions, limitations and opportunities for research**

In the case the professionals agreed harmoniously on the specifications of the outcome and respected others' decisions based on their expertise. We did not test our findings in circumstances where the alignment of collaborators is problematic, where agreement on the final outcome is a challenge or where there are conflicts of interests. Therefore we state that our findings are only valid under the condition that a general consensus on goals and collaboration patterns has been found to exist empirically. We tested our results in a relatively small-scale operation with moderate complexity, compared to something such as a megaproject. Although the case allowed us to gain a deep understanding of the micro-processes of expert collaborations and identify teaming as an inherent process, ideally, in future, the findings will be applied in a context with more risk and complexity, more diverse teams, and more hierarchical and geographical distance. Our case does not include the roles of non-expert collaborators. The performance of a runway show undoubtedly relies on the help of many support workers and administrative staff. Future research might look at the coordination,

communication, collaboration and ultimately teaming between experts and non-experts, and the facilitating role of objects in these processes.

## **CONCLUSION**

When professionals from different areas of expertise collaborate towards a defined objective they do this in a process called teaming (Edmondson 2012b). Teaming is the short-term collaboration of experts for the time that a specific expertise is required. Our research shows that teaming can be enhanced by professionals' extensive use of objects arraigned in various theoretical categories (Nicolini et al. 2012): infrastructure provides work objects and input materials, boundary objects enable communication across boundaries in product development, and epistemic objects motivate and drive collaboration. The objects mediate between team members through their material presence and properties. We contribute a model of the materiality of teaming that shows how an effective use of objects improves teaming processes by reducing the need for coordination and enabling a productive conjunction of individual and shared goals.

#### **4. Materiality and identity in crowd sourced design: The role of objects in co-creating fashion and collaborating in online communities**

##### **Abstract**

Co-creation between a firm and its clients is becoming a popular feature in product development. We collected qualitative data in three firms that draw on submissions in online communities to produce fashion. We combine the literatures on virtual collaborations, crowdsourcing, and sociomateriality to explain how objects function as infrastructure, boundary objects, and epistemic objects to facilitate collaboration between the firm and the members of the online community. We describe how the firms respond to their members' need for identity creation by actively using boundary objects to connect people, their ideas, and products. We contribute a model that illustrates the interdependency between the firm and its community, showing how objects can be used to enhance the community's inclusion, increase interaction, and motivate members to participate.

**Keywords:** virtual collaboration, crowdsourcing, objects, fashion, sociomateriality, identity



## INTRODUCTION

Innovative organizations benefit from a high number of quality ideas from various sources to be able to offer something new to their customers (Christensen 1997). In situations where the environment changes rapidly, creativity is said to be “a critical means by which organizations and their members can create meaningful, lasting value for their stakeholders” (George 2007, p. 439; Amabile 1988; George and Zhou 2001, 2002). To test out how this might occur in practice we carried out a multiple case study at three sites in the fashion industry. We address how fashion is made through crowd sourced online collaboration, specifically looking at the role of objects in facilitating such co-creation processes and the role they play in the human-material interactions taking place both face-to-face and face-to-screen. Discovering how organizations draw on the creativity of members of online communities to develop their products from these new forms of inclusion of customers in sourcing ideas can be a source of learning for traditional industries.

In this paper we show how ‘matter matters’ (Barad 2003, p. 801) in the virtual collaboration of amateurs and professionals to co-create, produce, and sell fashion items through the web and offline. Creative industries are beginning to include crowd sourced solutions in their strategies to draft new ideas and include customers in product development. We aim to increase the knowledge of *how* this happens and how an effective use of objects can improve online collaboration processes. Whereas online collaboration and open source development have become common practices in software development, they have not yet entered the industry of creating clothes on a mass scale. To our knowledge there is no previous research on the effects of crowdsourcing methods on the fashion industry and the possible advancement that an awareness of sociomateriality offers to those who use it well.

To find out how the firms coordinate structure and creativity to co-create fashion items based on submissions in an online community we answer the following research question: What challenges do the firms face and how can an effective use of objects in their theoretical categories help to overcome them? The cases represent innovation in creative industries, building on the force of online communities and social media helping to co-create new business models in which worldwide communities of designers and consumers drive creative processes. The research provides insight into online collaborative/co-producing processes from which recommendations will flow for organizations that aim to increase their online presence and operations. At present, managers often do not know what problems the crowd can solve and how to manage the process (Boudreau and Lakhani 2013).

The paper is structured as follows: first we review the literature on online collaborations, crowdsourcing, and objects in collaborations. Second, we describe our case studies and the method of virtual ethnography. Third, we present our results from the cases. Fourth, we discuss our insights from the findings and contributions to the literature. Fifth, we conclude with recommendations for applying the research in online collaborations.

## **THE ROLES OF OBJECTS IN VIRTUAL COLLABORATIONS**

In this review we address recent research on online communities in concert with the literature on the roles of objects in collaborations. We locate our research on virtual co-creation in fashion in the wider field of practice studies, thereby responding to the “practice turn” in contemporary theory (Schatzki et al. 2001). The growing interest in practice, interaction, and performativity “mirrors an attention to material practices in both social and human science at large.” (Nicolini 2012, p. 2) We address these questions in a new context, to find out how practice theory can be

applied to virtual interactions and organizing as a social process (Clegg et al. 1996) in the rapidly changing environment of the Internet. We consider practice theory a relevant foundation for our study because it seeks to combine the use of tools, discourse, and bodies.

Barley and Kunda (2001) state that managers change work patterns when they introduce new structures, technologies, or ways of organizing. By combining the research fields of sociomateriality and online collaborations we articulate phenomena pertaining in an integrated way to the domain of process thinking such as movement, activity, events, change and temporal evolution (Langley 2007). We consider the mix of practice and process theory in this study beneficial because “practice approaches are fundamentally processual and tend to see the world as an ongoing routinized and recurrent accomplishment” (Nicolini 2012, p. 3).

### **Virtual creative collaborations**

The literature on collaboration and co-creation online involves addressing two different theoretical fields: collaboration in online communities and crowdsourcing, which we conjoin to address how online collaborations produce material objects – in this case, fashion goods. The research question addresses how virtual “firms now learn from their customers and [how] new technologies push toward collaboration and more open forms of innovation” (Greer and Lei 2012, p. 63; Chesbrough 2003; Chesbrough and Appleyard 2007; Lichtenthaler 2008; Prandelli et al. 2006). Whereas research in this area has primarily focused on information systems development we consider it equally important to shed light on the benefits of online collaborations and crowdsourcing on a traditional industry such as fashion and textiles, an industry that needs to innovate at a rapid pace.

#### *Collaboration in online communities*

Online collaborations consist of interactions building on virtual co-presence. Social media frequently build the platform for such interactions, as tools “via which individuals and communities share, co-create, discuss, and modify user generated content” (Kietzmann et al. 2011, p. 241). Such platforms “enable access to the manpower of thousands of people on demand by creating human-tasks that are processed by the crowd” (Skopik et al. 2012, p. 298). Collecting contributions and innovation from large groups of people means that problems can be solved, decisions made, innovation encouraged and the future better managed, with better results, than when only a small elite determines outcomes (Surowiecki 2005). Social media have brought about changes in human interactions: they allow people to participate in innovation (McAfee 2006, Parameswaran and Whinston 2007) and develop products through collective action (Segerberg and Bennett 2011). Users come together voluntarily and often coincidentally (Subramaniam et al. 2013). Skopik et al. (2012, p. 298) state that “while in the past collaborations were bounded to intra-organizational collaborations using company-specific platforms (...) it is nowadays possible to utilize the knowledge of an immense number of people participating in collaborations on the web.”

A characteristic of collaborations in online communities is that people who do not know each other work together (Faraj et al. 2011). Online communities are defined as “open collectives of dispersed individuals with members who are not necessarily known or identifiable and who share common interests” (Faraj et al. 2011, p. 1224; Sproull and Arriaga 2007). Online communities are said to live without the mechanic structures of non-virtual collaborations, i.e. without “stable membership, convergence after divergence, repeated people-to-people interactions, goal-sharing and feelings of interdependence among group members” (Faraj et al. 2011, p. 1224; Boland et al. 1994; Carlile 2002; Dougherty 1992; Schrage 1995; Tsoukas 2009). According to Faraj et al. (2011, p. 1225) the lack of mechanical structures frees the collaborators from “concerns of social conventions, ownership, and hierarchy.”

Organizations seeking to take advantage of the characteristics of online communities need to overcome the challenge of keeping participants informed and involving new ones:

“[...] any participant can jump into the collaborative process without spending excessive time on the periphery gaining this basic knowledge of the community. If participants are kept informed, those who have little time can make valuable contributions [...], those with less passion can skim over the passionate exchanges between participants to focus their efforts” (Faraj et al. 2011, p. 1232).

Westenholz (2006, p. 30) has a different view on the ‘periphery’: to her, temporary workers “are the solution to a numerical flexibility” for organizations. Skopik et al. (2012, p. 298) see virtual collaboration as a form of “outsourcing tasks to external experts when lacking particular in-house expertise or development time,” implying that firms address the online community because of their own lack of resources. To Suddaby (2013, p. 1010) participants in open source development constitute a new generation of “very bright and creative people” who “are no longer burdened by traditional assumptions of private property, of how work should be performed or how it should be organized.” Sociologically, we may say that from a practice perspective, concepts such as bottom up trendsetting enable us to see how societies’ and individual firms’ goals can be mediated through social media.

Online communities unite members with diverse backgrounds and motivations. By looking at the role of objects in mediating these differences we address how the challenge of informing and involving members is confronted and show how a deeper understanding of the forces of sociomateriality can aid firms wishing to extend their practices by using social media and the web. We address these questions in a context where the structural mechanics of an offline firm

are combined with the fluidity of online communities, taking into account front and back stage narratives.

### *Crowdsourcing*

Companies can create value by integrating customers and users into their innovation activities (Chesbrough 2006). The firms in our cases rely on the contributions of their online community to design products, a process that came to be called crowdsourcing. According to Ebner et al. (2009, p. 342) crowdsourcing “is currently one of the most discussed key words within the open innovation community.” Crowdsourcing is defined as

“[...] the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer production (when the job is performed collaboratively), but is also often undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers” (Howe 2006a, p. 5).

The definition specifies that crowd sourced production can be collaborative but often is not. Howe (2006b) adds to this definition that the company must mass-produce and sell the outcome for it to be crowdsourcing. According to Brabham (2008, p. 75) creative industries depend “increasingly on crowdsourcing to find solutions to problems.” When organizations succeed at including customers in their innovation processes, they can tap a huge resource (Chesbrough 2006, Chesbrough and Crowther 2006, Enkel et al. 2005, Kristensson et al. 2002). The firms in our cases rely on crowdsourcing solely and the crowd is part of their *raison d'être*. In crowdsourcing, amateurs solve problems: aggregated wisdom replaces individual expertise. Companies wanting to crowd source hold ideas competitions that state to which topic the target

group can contribute an idea and give a time frame (Leimeister et al. 2009). Then a jury reviews the submissions and selects the winner (Ebner et al. 2009). The strategy is to attract a motivated and interested crowd able to produce more and better solutions (Brabham 2008). Therefore, the goal is not primarily to induce collaboration in developing ideas but to support compositing or aggregating ideas (Brabham 2010).

Levy (1997) proposes that crowdsourcing involves the values of democracy, spirituality, ethics and art because people can contribute their original ideas regardless of who they are, what they believe in, and why they take part. Participants are attracted by the opportunity to take a more active role, express individual freedom, contributing to a critical and self-reflexive culture (Benkler 2006). The goals of the participants can also be quite practical: the reward for winning is greater than the value paid to the winner (Brabham 2008). Contributors, in addition to earning money, learn new skills, gather experience, and gain a reputation that can lead to future employment (Mack 2006, Brabham 2007, Livingstone 2007a, 2007b) or freelance work offers (Brabham 2010). Organizations relying on the outcome of crowdsourcing for their product development face the challenge of maintaining a stable and growing community because in virtual collaborations networks often dissolve once a project is completed (Subramaniam et al. 2013). The research has addressed how objects are able to respond to the challenges of crowdsourcing, in mediating the material and immaterial needs of the company as well as the online community. In doing this, we contribute to the crowdsourcing research agenda that poses a major question for research and business, “how to find and lever the enormous potential of the ‘collective brain’ to broaden the scope of ‘open R&D’” (Ebner et al. 2009, p. 342).

### *Identity in face-to-screen interactions*

As the literature on online collaborations and crowdsourcing indicates, many of the motivations and incentives to participate are rooted in questions of identity. Westenholz (2003, p. 3) defines

identity as “socially constructed stories about individuals and their surroundings as they engage in their work practices.” Contributions to crowdsourcing are motivated by self-interest (Lakhani and von Hippel 2003), social capital (Nambisan and Baron 2010), social exchange (Faraj and Johnson 2010), and identity (Bagozzi and Dholakia 2006). One of the properties of online communities is social anonymity, meaning that the identifying information (names, intent, location, expertise) and the contributions of members often become separated (Faraj et al. 2011). A firm relying on users’ contributions then has to manage the positive and negative effects of this: whilst the fact that the focus is on the merit of ideas rather than the contributor (Jessup et al. 1990, Nunamaker et al. 1991) leads to a greater number of quality ideas (Parent et al. 2000), “anonymity may also reduce knowledge contributions if people are worried about not getting credit for their input and ideas” (Faraj et al. 2011, p. 1228; Scott 2004). Therefore we look at how the firms in our cases address the problems posed by anonymity and the need for identity creation.

Metz and Westenholz (2003, p. 162) acknowledge that people participating in online collaborations “have no historical antecedents to draw upon in negotiating identity(ies).” Participants, especially in design, are not part of a vocation group that is used to working at the periphery rather than the core of an organization, such as journalists might be. Metz and Westenholz (2003, p. 162) assume that participants “in temporary and scattered work practices find themselves in ambiguous situations as to their own identity and the identity of those with whom they collaborate,” confirming that questions of identity matter to the people involved at the periphery. Leimeister et al. (2009) refer to participants’ need for identity creation as a ‘social motive’: people participate in ideas competitions to demonstrate their capabilities, skills and competence. Our study analyzes the extent to which organizations address these questions of identity creation and ambiguity when collaboratively designing fashion products.



Identity plays a different role in online collaborations than in classic teams. Therefore we draw from writings on face-to-face identity work and enrich them with findings on face-to-screen or virtual interactions, to show how the interplay of technology and identity is mediated in firms that are based on the contributions of their buyers. Subramaniam et al. (2013) draw on Goffman's (1959) co-presence encounters to derive insights on virtual co-presence. Whereas Goffman considered forms of non-face to face interactions "marginal and derived forms of social contact" (Goffman 1971, p. 79), we include time and space spanning interactions (Zhao 2003) as relevant and appropriate in mediated interactions in virtual spaces (Subramaniam et al. 2013). Subramaniam et al. (2013, p. 8) define "'virtual co-presence' as co-presence in digitally mediated situations of 'virtual co-present interactions' enabled by the use of social media tools in organizational settings." Knorr Cetina (2009) introduces the concept of a synthetic situation to describe situations in which social interactions take place without physical presence that is through the use of technology: email, phone, screens. We include these definitions of virtual interactions in our research when we address how objects are able to respond to the challenges of crowdsourcing, in mediating the material and immaterial needs of the company as well as the online community. Metz and Westenholz (2003, p. 162) confirm that few studies have focused on "understanding the development of identities in this special type of work practices," which is why we pay special attention to identity in this study.

### **Objects as the 'stuff of work' for crowd sourced designs**

Previous research calls for better understanding of the active role performed by objects (Nicolini et al. 2012, Carlile 2004, Okhuysen and Bechky 2009, Orlikowski 2007). Nicolini et al. (2012) synthesize research streams on materiality in an analytical framework in which material infrastructures form an ecology of supporting objects, boundary objects act as translation and transformation devices, epistemic objects motivate cooperation and attachment,

and activity objects hold together knowledge and trigger innovation. We use the framework to gain a better understanding of the role of objects in online collaborations. Nicolini et al. (2012) point out that further research is necessary to explain how objects fulfill certain roles, change roles and what effect this has on collaborations. We address this research gap in our study on objects in crowdsourcing and online collaborations. Below we describe in detail the functions of objects as infrastructure, boundary objects, and epistemic objects.

### *The performing role of infrastructure*

According to Orlikowski (2007) the field of organization studies “has traditionally overlooked the ways in which organizing is bound up with the material forms and spaces through which humans act and interact” (p. 143). Organizational practices are always connected to materiality and Orlikowski (2007) includes material objects in human interactions. Recent research examines materiality as part of everyday activities (Orlikowski and Scott 2008). Sociomateriality seeks to “decenter the human subject” (Orlikowski 2007, p.1437) by including objects in research of organizational practices. The notion of performativity is a central idea in sociomateriality (Orlikowski and Scott 2008, Barad 2003). Performativity occurs when people in organizations use objects in their interactions and these objects are ascribed a performative role (Orlikowski and Scott 2008): think of PowerPoint presentations. Objects are active rather than static because they mediate relations and the processes of interactions. They are performative because they can be “actively and materially constructed (‘performed’)” (Orlikowski and Scott 2008, p. 461). The focus is on objects in daily use, those “boring objects” (Star 1999) that “combine to structure, anchor, and enable collaborative work” (Nicolini et al. 2012, p. 614). The firms in the cases assume that potential community member have access to material infrastructures such as computers and software programs, whereas the literature acknowledges certain infrastructural challenges to online co-creation, including access to a high

speed internet connection (Fox 2005). By including the role of infrastructural objects in the study we fill the gap of *what* is needed for the online co-creation of fashion to take place.

### *Boundary objects as communicative bridges*

Boundary objects are material things that allow their users to communicate across boundaries. Star and Griesemer (1989) first introduced the concept in a paper on coordinating the opening of a museum. To found the Museum of Vertebrate Zoology at the University of California, Berkeley, people with different backgrounds had to work together, specialists such as biologists and museum administrators, as well as amateur enthusiasts. Boundary objects are defined as things that can have different meanings for participants, allowing heterogeneity and cooperation to coexist, having interpretive flexibility (Star and Griesemer 1989). Boundary objects provide structure for informatic and work process needs. As boundary objects are dynamic between ill-structured and tailored uses, different groups can work together without consensus, using ‘organic infrastructures’ (Star and Griesemer 1989). They are the ‘stuff of action’ that resides between social worlds, and therefore can be vague but useful (Star and Griesemer 1989). Star and Griesemer (1989) give a list of four kinds of things that can function as boundary objects: repositories, ideal type things, coincident boundaries and standardized forms. Examples of boundary objects are prototypes, models, and drawings.

Carlile (2002) has taken the sociological concept of boundary objects into an engineering context and the management literature. He shows how boundary objects can facilitate knowledge sharing across functional boundaries. Carlile (2002) explains how prototypes allow people from different departments to communicate and align their needs. According to Carlile (2002, p. 442), boundary objects can be “described as a means of representing, learning about, and transforming knowledge” in innovation and product development. Connecting practice theory and boundary objects in an empirical study on crowdsourcing has the potential of filling

the gap of what role boundary objects play in sharing knowledge in product innovation through online communities. In practice theory, knowledge is “always a way of knowing shared with others, a set of practical methods acquired through learning, inscribed in objects, embodied, and only partially articulated in discourse” (Nicolini 2012, p. 5).

### *Epistemic objects as drivers of collaboration*

In the process of collaborating to achieve shared goals, epistemic things (Rheinberger 1997) fulfill the function of motivating the creation of something that does not yet exist, developing something that has not reached its final form, inspiring and materializing thought. Such objects of expertise can trigger and drive a creation process (Knorr Cetina 1997). Activity objects act as organizers and motivators around which the community revolves/evolves: “Collective action is inherently object oriented and the pursuit of some kind of object(ive) is what motivates collaborative work” (Nicolini et al. 2012, p. 614; Miettinen and Virkkunen 2005). Epistemic things have an open-ended nature and an emotional holding power that creates attachment. When experts collaborate to innovate, their wants are directed towards a material object, often expressed as an intermediate representation. Objects of expertise are always changing when they are being materially defined. Since the firms in our cases include amateurs in product development we want to find out how applicable the literature on epistemic things is to collaboration within an online community that does not comprise a tight network of expert coworkers. There is a gap in the literature that we will fill: how do firms based on submissions from an online community succeed in motivating the crowd to work towards a shared material goal?

## **The materiality of crowd sourced co-creation**

Brabham (2008, p.81) recognizes the importance of the Internet as an infrastructure that grounds crowd sourced activities and uses boundary objects to connect:

“The web is the necessary technology that can realize the four-pronged specifications of crowd wisdom and flex a mass of users into productive laborers. [...] Given that users spread throughout a geographical terrain, among a variety of cultural backgrounds, the web can facilitate the exchange of diverse opinions [...] both in real time and asynchronously.”

The web is the ideal technology for “aggregating millions of disparate, independent ideas without the dangers of ‘too much communication’ and compromise” (Surowiecki 2004, p. xix). It is also the technology that allows participants of online collaborations to stay in touch regardless of where they are, because presence and availability are important for online social relationships (Kietzmann et al. 2011). Leimeister et al. (2009, p. 202) and Piller and Walcher (2006) recognize the role of the Internet in facilitating calls for submissions/ideas competitions:

“Internet technology facilitates the realization of an ideas competition, provides access to a large group of customers, and facilitates easy submission of ideas. Internet-based competitions, therefore, lower the effort and costs for participants as well as for organizers.”

In virtual collaborations, workers operate “with or on representations” (Bailey et al. 2012), a practice previously observed by Ewenstein and Whyte (2009) who classify visual representations of work as epistemic objects. In online communities convergence of goals, processes, and proposed solutions is unlikely; however, temporary convergence forms around general topics or appropriate uses of ideas (Faraj et al. 2011). We look at how far the concept

of epistemic objects can be used in the context of online co-creation to motivate collaboration towards common goals.

Crowdsourcing is different from open source collaborations because it is able to overcome a “material” problem: the open source model is well suited to software development where little or no cost is involved in getting material things onto material shelves (Brabham 2008). The willingness to contribute for no material reward decreases once someone makes a material gain from investing in production; therefore, crowdsourcing functions under an explicit reward scheme. “Crowdsourcing [...] overcomes these limitations in the open source model by providing a clear format for compensating contributors, a hybrid model that blends the transparent and democratizing elements of open source into a feasible model for doing profitable business, all facilitated through the web” (Brabham 2008, p. 82).

To answer the question of how far objects can help to “truly democratize innovation in crowdsourcing” (von Hippel 2005) we apply the literature on objects to three case studies. We aim to find out how objects mediate crowdsourcing processes as tools/instruments and how a better understanding of their role as infrastructure, boundary objects, and epistemic objects can facilitate the co-creation of design products between amateurs and professionals, a wide spread online community and an internet based firm.

## **METHOD**

In this section we describe the research setting, the virtual ethnographic case study method used and why we include data collected online to answer the research question.

## Research setting

The research setting consists of three internet-based fashion firms that produce clothing based on design submissions in their online communities. We selected the cases because the firms aspire to produce fashion and/or art items rather than self-designed pieces of clothing. They differ in size and age but they all draw on an active community of users, customers, and artists to create products they sell online. The cases offer a range of approaches that represents low, medium, and high community involvement. Whereas *Shortomatic* sets its focus on customization, *Threadless* makes art work accessible as clothing to a mass market, and *Center Stage*<sup>1</sup> aims at combining high end fashion and democratic values. The firms have been operating worldwide from the beginning, making efforts to attract an international crowd of design submitters and buyers.

*Shortomatic* is part of *Anymatic*, a group based in California, founded in 2007, consisting of four customization firms, for shirts, shorts, bikinis and yoga mats. At *Shortomatic*, customers can print their own design/photo onto board shorts and order them for personal use. The offer was extended to shorts designed by established and unknown artists who are financially rewarded for their contributions. The designs range from graphical work and innovative photography to free spirited fine art. Whilst everyone is encouraged to “have a go” *Shortomatic* aims to provide high quality lifestyle products: the in-house collaboration of fashion designers, athletes, and sewing experts ensures that the garments meet high technical and aesthetic expectations.

*Threadless* is a company based in Chicago that started by printing designs submitted by users onto T-shirts in 2000. Over time, the product range was extended to hoodies, kids and babies

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<sup>1</sup> Company name changed for anonymity

fashion items, bags and other things. The idea is to provide a platform for making art. The firm emphasizes that their sales support art and reward designers financially (\$7 million since 2000). *Threadless* is the oldest of the cases in the study. Although it is a traditional firm with founders, owners, employees, and profits, in common with the other cases it considers itself a community: “*Threadless* is a creative community that makes, supports, and buys great art. When you buy from us, you support the artist who created the design” (<https://www.facebook.com/threadless?ref=ts&fref=ts> accessed on March 13, 2013).

While *Threadless* considers itself to be an established company *Center Stage* is a startup based in Berlin. The Arab Spring was an inspiration for *Center Stage*’s founder. In 2011, the year of its foundation, he introduced the new concept of “fashion democracy”: the company’s idea being to provide a platform where aspiring designers and potential buyers – the fashionistas – come together and vote on designs to be produced and sold. So far handbags, scarves, and leggings are available. Each design series belongs to a theme and each design carries a story that is narrated on the website as a text or video. Potential designers inspired by *Center Stage*’s call for submissions to test their ideas before the online audience by asking for votes and comments, with the most popular items of each call produced and sold through *Center Stage*. *Center Stage* aspires to become a design house expressing the concept of democracy: designers from all backgrounds get an opportunity to showcase their work to an international audience and earn from their sales if a submission gets produced. Fashion items are made and selected by the fashion crowd, rather than being dictated by big design labels and the fashion press. The next step in the company’s development is coordinating the technology and resources needed to crowd source the first seasonal clothing collection. The firm recently crowd-funded the technological innovations it is planning, therefore taking the crowd concept further than the other cases.



## **Research design**

The idea for this case study emerged during the process of conducting ethnography in a traditional fashion brand. The first author heard about bottom up co-creation in fashion and became interested in the possibilities and feasibility of such an endeavor. The proximity to fashion design and the experience from having collected data in this industry before allowed observation of the difference between offline and online collaborations to create designer clothing/accessories. We use documents as data and focus on “how they are used, and how they can function in episodes of interaction” (Prior 2011, p. 107). Since we look at virtual collaborations we pay attention to the specificities of internet research, because the internet “challenges how we understand and conduct qualitative inquiry in an epoch of media convergence, mediated identities, redefinitions of social boundaries, and the transcendence of geographical boundaries” (Markham 2011, p. 112; Baym and Markham 2009). The research design combines “the study of [a] social phenomenon using internet-based tools for collecting [...] information,” (Markham 2011, p.112) and “the study of sociocultural phenomena that are mediated by, interwoven with, or rely on the internet for their composition or function” (idem).

Karpf (2012) states that the established methods of social sciences are inappropriate for rapidly changing media such as the Internet. The term virtual ethnography describes a broad range of research methods used to answer research questions with heterogeneous data (Dominguez et al. 2007), collected online at multiple sites, replacing material spaces with cyberspace (Wittel 2000). Using virtual ethnography, we aim to maintain the rich context and thick descriptions ascribed to traditional ethnographic research, applying traditional fieldwork to an online setting (Hine 2008). The objects of the study are the online firms and communities as the lifeworld of participants rather than the Internet itself.

## **Data collection and analysis**

We collected our qualitative data from cases' websites and Facebook pages, consisting of text, photos, videos, and designs, during the course of a year. The data collection is longitudinal so we observed several instances and repetitions of the co-creation processes and how the firms changed them over time with increasing experience. As startups (this only applies to *Shortomatic* and *Center Stage*) the firms have different aspirations and underwent significant changes through the year, which we were able to track and include in our results. We first explored the visible aspect of crowdsourcing and then focused on the inner workings of one of these firms to understand the initial observations.

Sade-Beck (2004) states that research restricted only to online data provides limited understanding of an issue. Therefore, in addition to the data collected online, we interviewed the founder of one case, its branding, social media and production managers, as well as a marketing intern. The semi-structured interviews were in-depth and face-to-face to provide a detailed understanding of the firm's processes. Davis et al. (2004) found that researchers obtain more meaningful data in face-to-face interviews than online interviews. The interviews allowed us to learn about the real offline operations in contrast to the online performance. We adapted a multi-method approach (Eberle and Maeder 2011) to our virtual ethnographic case studies, collecting data from documents and the Internet, as well as interviews. We used an inductive approach to categorize the data according to emerging categories and systematically developed a theory from the data collected (Charmaz and Bryant 2011, p. 291). The processual steps followed in developing the product that are common across the cases constitute the categories with which we transposed data into results.

## RESULTS

In the process of making a crowd sourced design product, the firms all carry out the following steps: developing a white canvas in-house, making an open call for design submissions to be projected onto the white canvas, determining and rewarding a winner, mass producing and selling the winning design product online. The steps follow this order in every case. The following section describes how each firm handles these processes and points out where the differences lie.

### **White canvases: within-firm backstage preparations**

All cases of virtual design firms provide ‘white canvases’ for participants to project their designs onto. The online fashion companies provide a white canvas, whether it is a pair of shorts, t-shirts, or handbags. Image 9 shows an example of a canvas, a handbag by *Center Stage*, which will subsequently have a design printed on it.

**Image 9: A white canvas handbag**



*Center Stage* produced a white canvas handbag in-house. The community's design submissions are projected onto such a canvas.

The white canvases are the basic infrastructure inspiring design ideas. They constitute the basis on which online design work is projected. White canvasses create epistemic object that underlie the prototypes shown on the websites during the voting phase. The community members interact around visual designs that are applied to the white basic material. Image 10 shows a handbag with a print.

**Image 10: Handbag with winning design printed on it**



A handbag by *Center Stage* with a winning design printed on it. The tag identifies the designer and includes a short story on what inspired the design.

Conversations around plain canvases and their various prototypes take place backstage within the design firm and exclude the online community. In the case of *Center Stage* this is due to technical limitations. When asked what they would do if a community member suggested their own canvas, they would say “Come back later, at the moment we cannot do it,” confirming Boudreau and Lakhani (2013, p. 65) who found out that in crowdsourcing “the contest must be structured to yield solutions the organization can feasibly implement.” The marketing intern stated that “The designers like to have the silhouette; it is a challenge to make something on a

silhouette, when they didn't make the whole thing.” The process of designing for a canvas is inherently different to making a complete design consisting of form, material, and graphic print. The processes of crowd sourced design are always collaborative because they combine canvases with designs from different people's creative inputs requiring combination and therefore collaboration.

The canvases are made with quality and price requirements in view. *Shortomatic* emphasizes that they make the “best performing canvas” and that their shorts undergo rigorous testing, providing robustness in addition to lifestyle and art attributes. The testing and development of canvases included inspection by different external specialists, “eminent fashion designers and equally demanding sportsmen,” carried out offline by *Shortomatic*. Data from *Center Stage* show that the back stage work of developing a canvas and finding a manufacturer is time consuming and depends on many variables:

“We have issues with manufacturers; it is hard to have the price range [we want] with perfect canvases. We want to make our own [signature] silhouette, find a new manufacturer. It takes time.”

*Center Stage* has one full-time employee for production and an intern solely for finding and contracting new manufacturers and materials. The social media manager explained how the team makes decisions about canvases: “We vote on sketches of them and then choose the design.” She explained how collaboration within the firm takes place: “[There are] 10 persons in the team, there's no hierarchy, there's someone responsible for the different tasks, all contribute with ideas, it is flexible.”

Whilst the priority of the canvas for *Center Stage* is that they meet style and fashion criteria, *Shortomatic* focuses on technical features: “The shorts are made from a robust 'super suede'

polyester microfiber, highly effective for deflecting surface water, while the sheer satin finish inside means unimpaired mobility.” During in-house development canvases constitute an epistemic object because the different experts collaborate, creating something that does not yet exist and that will inspire the community to submit designs. *Threadless* points out the opportunities that the canvases they choose offer for the community: “We seek out these canvases, so you can continue to make and pick the best art.” *Threadless* sees its canvases as fulfilling the function of basic infrastructure, so that designers can focus on their art as epistemic things and not bother with mundane work such as checking cotton qualities, fabric durability and the technicalities of applying a graphic design onto textiles.

### **Call for submissions: The community enters**

The firms regularly or continuously call for design submissions for their products. *Center Stage* gives a theme and specifies what kind of product the designs are to be printed on, i.e. whether the call is for scarves, bags, shoes, etc. *Center Stage* ensures the submissions are geared towards a common theme as much as possible by providing a color palette and reminding the community to adhere to it: “Please try as hard as possible to stick to our colors and theme!” The firm also expresses a technical requirement that the designs need to meet so that their application onto the canvases (in this case there are three items: a dress, shoes, and a bag) is feasible: “We need repeatable prints for this design challenge!” As *Center Stage* works with the ambition of becoming a high fashion label, rather than providing new designs or art, it faces the challenge of inducing a way of collaborating online that shows some form of standardization and coherence and reflects a story just as in traditional offline fashion design houses. *Center Stage* reminds the community that the collections and therefore the designs should be visually connected:

“We want pure originality and creativity but need to stick to a collection – so take a look at previous winners and see what they have created. Don't copy but use as a benchmark.”

Previous designs serve as boundary objects to inspire submissions that are epistemic objects for the participants working on them at that time. *Center Stage*'s call for submissions are labelled “design challenges“. Great care goes into preparing the calls for submissions, which are the backstage work of a designer who is located in Spain but works as if he was in-house. He needs to present a theme in the form of pictures and a story, therefore presenting a boundary object to be understood by as many community members as possible that leads to theme-related submissions by a crowd from diverse backgrounds. The social media manager summarized the process:

“We provide a mood board, a color scheme, the platform; we give a theme, colors, submitters make the visual part, in a specific format for those who don't know about design; [when we make a] bag: [the program shows the] pattern on the bag, and pattern only, that's what they submit; the technology is off the shelf, standard. The colors are based on trends.”

*Center Stage* ensures that calls for submissions are inclusive, by appealing to a wide audience thematically and making technical access as easy as possible by using the infrastructure of common computer programs. Trends are given seasonally, i.e. for spring, summer, fall and winter, by outside material sources of expertise such as industry magazines. These present trends in the form of color tables and photos of people who are considered “trendsetters”. Thus, the brand draws in outside expertise to include in their boundary objects, thus influencing the epistemic objects that community members are working on. *Center Stage* defines the



infrastructural needs of the designers willing to participate and even their motivation: “In order to get this done you need a sketchbook, a drawing tool, and the desire to do something with it.”

*Threadless* emphasizes the role of the community in its crowd network consisting of design submitters, the commenting audience, buyers, and the in-house team:

“As you'll quickly learn, *Threadless* isn't just about you making things all by yourself lonesome. There's an active community of people here on the forums, like myself, who are always around to help you [...] you can use the community to help you out with your designs: post your works in progress (WIPs), send people your design files.”

The website mentions that idea theft is not a problem in this “community.” Although *Threadless* does not aim to produce a coherent collection it also tries to induce submissions that are thematically coherent:

“The community favors particular styles over others. In fact, it's possible to see trends in designs that do well and have that 'Threadlessy feel' to them. I've done my best to try to figure out what it is that makes particular designs score well. I've narrowed it down to two attributes: concept and aesthetics. The concept of a design is the story. All designs should invoke some thought within the viewer, but some do it more explicitly than others.”

The site offers examples illustrating design with a concept and with aesthetics. *Threadless* uses pictures as boundary objects to help users understand abstract concepts in the context of their company.

*Shortomatic* does not make specific calls for submissions but instead features a permanent link called “Check out our artist program” on its website. It features a community section that is separate from the section where customers upload a picture for their own custom made shorts (which recently came to be named “upload your art”). *Shortomatic* presents winning designers and their work, thus encouraging new submissions. *Shortomatic* has the simplest user technology allowing anyone who is able to take a picture and upload it as a jpg file to join its community, as opposed to creating an artistic design. The firm refers to a YouTube video that shows users how they can upload a design and apply it to the shorts canvas, plus choosing from colors and trimming variations. *Shortomatic* is the case in the study that carries out the highest share of work in-house, excluding the community. It proudly refers to its offline operations as a “fully functional design studio/gallery space in Santa Monica, Southern California.”

### **Design decisions**

When the backstage work of making a canvas and releasing a call for submissions is concluded, communication about designs takes place on the front stage, the website of the virtual design firm. The white canvases are epistemic objects during in-house prototyping. Once their development is concluded they serve as material input for the submitted designs. The designs available for voting are the boundary objects constituting the community around which conversations take place. *Threadless* and *Center Stage* include voting for design submissions in the decision of what to produce; however, they reserve the right to have the last word on which highly ranked designs will win. *Center Stage* is open about this part of the procedure,

“We chose 3 to 5 winning artworks for each design challenge. If it is not wearable, it’s not good enough, [then] *Center Stage* doesn’t make it. Everything goes up for vote, *Center Stage* picks from top 10, it’s impossible to narrow down to 1, there are 3-5 winners. We realized that there are many

good entries ... A panel of judges (including our team of in-house designers and creatives as well as a mixture of Berlin-based creatives) chooses 3 to 5 winning scarves for each design challenge [...].”

Before these final decisions, commenting and voting takes place:

“Over a period of eight days, the *Center Stage* community will score and comment on your design. These scores and comments will help us decide which designs should become the very first collection of Bags, Shoes & Dresses for *Center Stage*.”

During the design upload and voting phases, community members can comment on designs. In the voting phase, submissions are shown as designs with a title and a text written by the submitter stating what inspired him/her, with no name. This ordering does not allow designers to change comments in their submission. *Center Stage* states that the comments influence the decisions of the jury panel that selects the winners from the most highly ranking designs.

The commenting and voting phases in selecting designs are important for the firms to grow their community. The social media manager of *Center Stage* confirms that “The designers help advertising and mobilize the community.” When asked to how many people *Center Stage* has access to for its calls and voting, she answers: “It’s like with our Facebook page, we have 7,000 likes, but we reach 20,000, through shares, people share and that’s most important.” Then she adds:

“All submitters always come back. They tell friends to spread the word for votes.”

Once people participate in the community they remain in it and often become more active, i.e. from buyer to voter to submitter. At first a potential community member desires to see or buy a “different” design product. Then the ease by which barriers to entry are overcome induces a desire to participate and contribute to the next product, i.e. collaborate towards an epistemic object. Our results contradict Subramaniam et al. (2013) who found that in virtual collaborations networks often dissolve once a project is completed. On the contrary, the successful completion of a collaborative design project inspires the community to participate in the next one.

At *Shortomatic* the firm alone decides which designs to offer to customers. It does not provide a platform for an open exchange of comments but users can email the artists directly. *Shortomatic* creative directors reserve the right to decide to mass-produce a member’s design there is no public voting and the decisions are made backstage. An “artist program curator” is responsible for deciding which designs will be included in the “gallery”. In this sense *Shortomatic* is closest to the way traditional artwork finds access to consumers, through being recognized by an expert authority, something reflected in the vocabulary chosen.

The websites of the firms serve as boundary objects in the design submitting and voting phases. They provide the structure for the development communication to occur: there is a virtual space where people meet to exchange opinions about designs and this way they are able to enhance the development of the final product. The ease with which technical limits are overcome allows for a wide range of community members to take part in the design process. *Center Stage* states: “Everyone is encouraged to and shown how to participate.” Technical barriers to entry are low for potential community members and aspiring design submitters. The infrastructure of the websites offers an additional benefit: users are easily directed towards related content by providing links. Websites are a platform through which the firms can inspire, using visual and

audio material. Through the configuration of the website submissions are already pre-selected: any document that does not meet the technical requirements (e.g. a high resolution) is filtered automatically.

## **Rewards**

Community members are motivated to submit designs because they are attracted by the possibility of winning a financial reward, an exchange value lower than the value (surplus value) the firms realize from outsourcing design work (Brabham 2010). Rather than exploit employees in the time-honored fashion the firms exploit the creativity and ingenuity of their ‘followers’ online. Followers that are successful in their designs become identities in the community. We identify identity creation as a strong motivator for people to respond to calls for submissions.

### *Financial reward*

The firms in the study all offer financial rewards for winning designs. *Center Stage* emphasizes its democratic values by paying designers a share of sales profits in addition to the financial reward of winning a design challenge:

“Each winner will receive a cash prize of €500, plus one of their products when it arrives in stock. But that’s not all – each & every time we sell 500 pieces of your design, you will receive an additional €200. This means that *Center Stage* can continue to embody the spirit of fashion democracy, rewarding our top designs again...and again...and again!”

*Threadless* pays \$2000 to winning designs, plus gift certificates and \$500 each time the design is reprinted. The firm attracts designers’ submissions with the slogan “Click here to submit a

tee shirt design for a chance at getting paid \$25000+”. *Threadless* also writes, “Get paid like these two,” and then names two artists who have earned in the tens of thousands. Interested buyers who browse the website to register for community membership are attracted by the benefits listed there: earning money, being part of a creative community and earning points for participation that can be used for purchases. Potential buyers are involved in three ways. *Shortomatic* advertises with the call to “Submit your shorts designs and make up to \$1000 per design!” through a percentage on each sale. Designs are produced in a limited edition of 200 pieces and the artist earns \$5 with every pair, as well as being obliged to donate 5% to an environmental charity.

*Identity creation for design submitters: incentives to participate*

In contrast to the backstage technicalities of providing white canvases stands the front stage work of active identity creation: here the design firms and the submitting artists work together. The firms ensure that the items contain the identity of the designer by including his or her name on the product and providing additional information, either on the website or on the item itself.

*Shortomatic* advertises that,

“best of all: every pair of shorts is printed dynamically with the artist name, image title/description and edition number of the shorts, along with the option for a personal message –This wraps right around the inner waistband and certifies that you really have purchased a work of art!”

In this case, the artist’s identity is even connected to the buyer’s identity by allowing the buyer to add a personal message. The firms appeal to participants’ (who are not necessarily customers) self-image of being an artist: “This really is the quickest and most rewarding way to become a fashion designer ever!” (*Shortomatic*). On the start page of *Threadless* current designs are

shown, for example on T-shirts, worn by a model: the picture shows the product, underneath it is the title of the work and “Made by ...” (the designer’s real name). The firms claim to give a voice to aspiring designers: *Shortomatic* declares that, “We empower the individual as a designer, whether it is a ‘one-off’ production, or hanging their collection of works in our galleries.” *Shortomatic* presents artists with links to their personal profiles, their name, picture, home country, and a one-sentence quote. On the *Threadless* website, designers have a personal profile that states the artist’s name, a short description and a score of submissions and productions. There is a picture and links to blogs, twitter, etc. The profile displays the designs available for purchase, as well as links to votes and critiques. *Center Stage* only states the name of a piece’s designer, a literary text about the person and his/her inspiration and a link to other works by the same artist. The text is written by *Center Stage* and based on an interview with the artist that is also available on the website. In a call for submissions *Center Stage* proclaims: “We will also conduct an interview with the winners, publicizing their design across the fashion community in Berlin and worldwide.” In addition to this outside recognition of an artist’s work, *Center Stage*’s social media manager explains that “we motivate with the concept of ‘creating’, its mine, I made it, earn money with it.” This concept of ownership is also used by *Shortomatic* which writes that successful designers will have their “Own gallery page with personal links and images.”

### **Producing and selling**

The fact that the canvases have been decided beforehand, including how they are made, from what, and where, leaves few production decisions open once the designs are chosen. *Center Stage* is the only brand that uses traditional distribution channels in addition to its online shop. 80% of their products are sold in boutiques, and department stores (246 locations at the moment). To differentiate itself from the competition, all *Center Stage*’s products come with a

story on the tag, based on an interview with the designer, and the artist's statement. An example of a tag can be seen in Image 11.

**Image 11: A tag accompanying a scarf by Center Stage**



The tag informs the buyer on the designer's identity and what inspired his or her design. The texts are based on an interview *Center Stage* conducts with the artist.

The tag is a boundary object that makes the item of clothing or the accessory a piece of “fashion” because it conveys a story. The social media manager stated that “we are the bridge between design and production,” because the brand coordinates the collaborative processes between suppliers, consumers, and the online community, involving infrastructural, boundary,



and epistemic objects. In this function the firms constitute boundary organizations (O'Mahony and Bechky 2008).

*Threadless* presents products on its website according to category, i.e. T-shirt, iPhone case, etc., always emphasizing the graphic design aspect. There is one physical store at the company's headquarters in Chicago. *Shortomatic* organizes the shorts in its online shop primarily by pattern theme, e.g. "abstract", "nature", "black and white" but also by artist, assuming that customers will be interested in the complete work of a designer if they like one of his or her pieces. None of the firms require their designers to purchase anything themselves, which differs from other apparel brands, such as Converse, which offers "customization" by allowing customer to select and combine colors in their web shops.

#### **Table summarizing the roles of objects in every process**

When we look at the processes of virtual design in the three cases, we are able to see what role objects play in the front and backstage work processes that constitute product development through crowdsourcing. Table 4 summarizes the processes and identifies which objects are used according to Nicolini et al.'s (2012) theoretical framework.

**Table 4: Summary of objects and their role in crowd sourced fashion development**

The actual objects appear in italics

Process	Objects fulfilling infrastructural role	Boundary objects enabling understanding	Epistemic objects motivating participation
<b>Canvas development</b>	<p><i>Paper and pencil</i> for sketches of prototypes;</p> <p><i>Fabric</i> of canvas;</p>	<p><i>Drawings</i> of canvases serve as boundary objects during canvas development;</p> <p><i>virtual prototypes</i> of canvas with design print allow participants to pre-view the outcome of a design submission</p>	<p>The <i>vision of a perfect canvas</i> (in terms of style and quality) to inspire the community's creativity motivates the in-house collaboration towards its development</p>
<b>Call for submissions</b>	<p>Canvas specifies what <i>kind of product</i> will be made;</p> <p><i>Color tables</i> from industry magazines provide information on seasonal trends;</p> <p><i>Information technology</i> enables the uploading of design submissions and viewing a virtual prototype;</p> <p><i>Computer programs</i> the community members have installed on their computers;</p> <p><i>Sketch book, drawing tool</i>;</p>	<p>Theme consisting of <i>story and pictures</i> introduces coherence to submissions;</p> <p><i>Color palette</i> streamlines submissions, guides participants;</p> <p><i>Previous designs</i> as examples of what gets produced;</p> <p><i>Forums</i> as platform for interaction around potential design submissions;</p> <p><i>Video</i> with instructions on how to upload art</p>	<p>Possibility of being part of a <i>collection</i> inspires creativity and collaboration</p>

<i>Internet access</i>			
<b>Design decisions</b>	<i>Website</i> as platform for comments and voting	Conversations around <i>virtual prototypes</i> take place on website;  Story (text) by submitter informs audience on purpose/meaning/inspiration of work	Objective of finding <i>the most artistic and beautiful design</i> motivates conversations and voting;
<b>Rewards</b>	The <i>financial rewards</i> fulfill material needs, enabling winners to continue their work	<i>Product tags</i> and <i>Artists' profiles</i> on company websites inform on designers' identity	Being part of a <i>fashion collection</i> rewards contribution
<b>Production and sales</b>	<i>Online shops and offline stores</i> as the infrastructure to sell crowd sourced items	<i>Company</i> (as boundary organization, Bechky and O'Mahony 2008) enables sourcing and selling across geographical and professional boundaries	<i>Finished material product</i> available to a wide range of customers on material shelves (Brabham 2008)

The three object categories are present at every stage of making a design product through collaboration in an online community. Interaction in the virtual space works best when all three levels of objects are present, i.e. where basic infrastructural needs that allow people to participate are met, when boundary objects succeed at creating understanding among a diverse crowd, and when effective epistemic objects are in place to motivate community members to contribute to the next fashion item.

Our findings make one point clear: while the cases differ in their approaches and targets the processes and objects they use in pursuing their objectives can be grouped together. This shows

that in essence the cases in the study are rather similar in terms of what they use to make a new design product, what they use to communicate, and what motivates the community members to participate.

## **DISCUSSION**

The firms in the study face the challenge of attracting a diverse crowd that is united by an interest in fashion, art, and design. The companies have understood that “active participation of potential lead users is the key to success” (Leimeister et al. 2009, p. 198) and therefore combine the tasks of a classic enterprise with the features of an online community. The results show that objects fulfill the roles of all three theoretical categories (Nicolini et al. 2012) in every phase of developing a crowd sourced fashion item, from the idea to the final product. Objects enable firms to go back and forth between in-house offline collaboration and co-creation with a worldwide online community. The discussion describes how objects are used to overcome the challenge of identity and product separation, how objects mediate interactions between the firm and the community, and how an effective use of objects facilitates collaboration processes.

### **Identity as the strongest motivator**

According to the literature, the contributions of online community members often become separated from their ideas and this hinders participation (Faraj et al. 2011, Scott 2004, Jessup et al. 1990, Nunamaker et al. 1991). The practices of the firms in the cases contradict this literature: identity creation and presentation is an indispensable part of attracting contributions. The firms encounter the separation challenge by using boundary objects to respond to the identity needs of their community members: designers’ identities are communicated extensively on the websites and products.

Identity creation is as important for designers as identity provision is for buyers. We include the role of buyers because only when the product is bought does it fulfill the epistemic object purpose ascribed in being fashion. Potential consumers of virtually designed products are interested in who made the creations they are seeing; they want information about the unknown designer, something that Goffman (1959, p. 13) sees as generic information seeking behavior. Buyers, but also submitters, voters, and other community members, build the crowd that seeks this information. Face-to-face interactions are extended to “co-presence as a form of co-location in space-time” (Subramaniam et al. 2013, p. 7; Zhao 2003) reflecting the ‘sense of presence’ of online collaborative work (Fowler et al. 2004).

Markham (2011, p. 114) states that “the presentation of self may be represented in writing, sound, moving and still images, live or pre-recorded video, avatars, various displayed artifacts,” indicating that the firm can take advantage of the properties of the web to extend the possibilities for identity creation. We identify active identity creation as the immaterial factor that companies relying on crowdsourcing for their product development need to provide to motivate community membership and participation. While the specific identity is immaterial offering it in virtual fashion design objects of all three theoretical categories is significant.

### **Objects mediate between in-house collaboration and online co-creation**

Objects mediate the interdependency between in-house collaboration excluding the community and online co-creation drawing from a worldwide source of potential designers. We explain the facilitating role of objects in these processes.

#### *Interdependency between front and back stage narratives*

The firms use objects to mediate between their front and back stage narratives (Goffman 1959): The front is the part of the narrative that the whole community sees, the website, the public face

of the firm, where the interaction of and with the online community takes place. Back stage is where the “virtual performance” is prepared, directed and negotiated, where the strategic strings are pulled, where decisions about what goes on front stage are made and where information is concealed from the online community. Front and back stages are interdependent. There are three types of interdependency, namely “‘sequential’ interdependency, where an employee starts work once another employee has completed his or her part of the task; ‘reciprocal’ interdependency, where an employee works in tandem with others; ‘pooled’ interdependency, where users complete tasks for review by each other” (Subramaniam et al. 2013, p. 4; Thompson 1967).

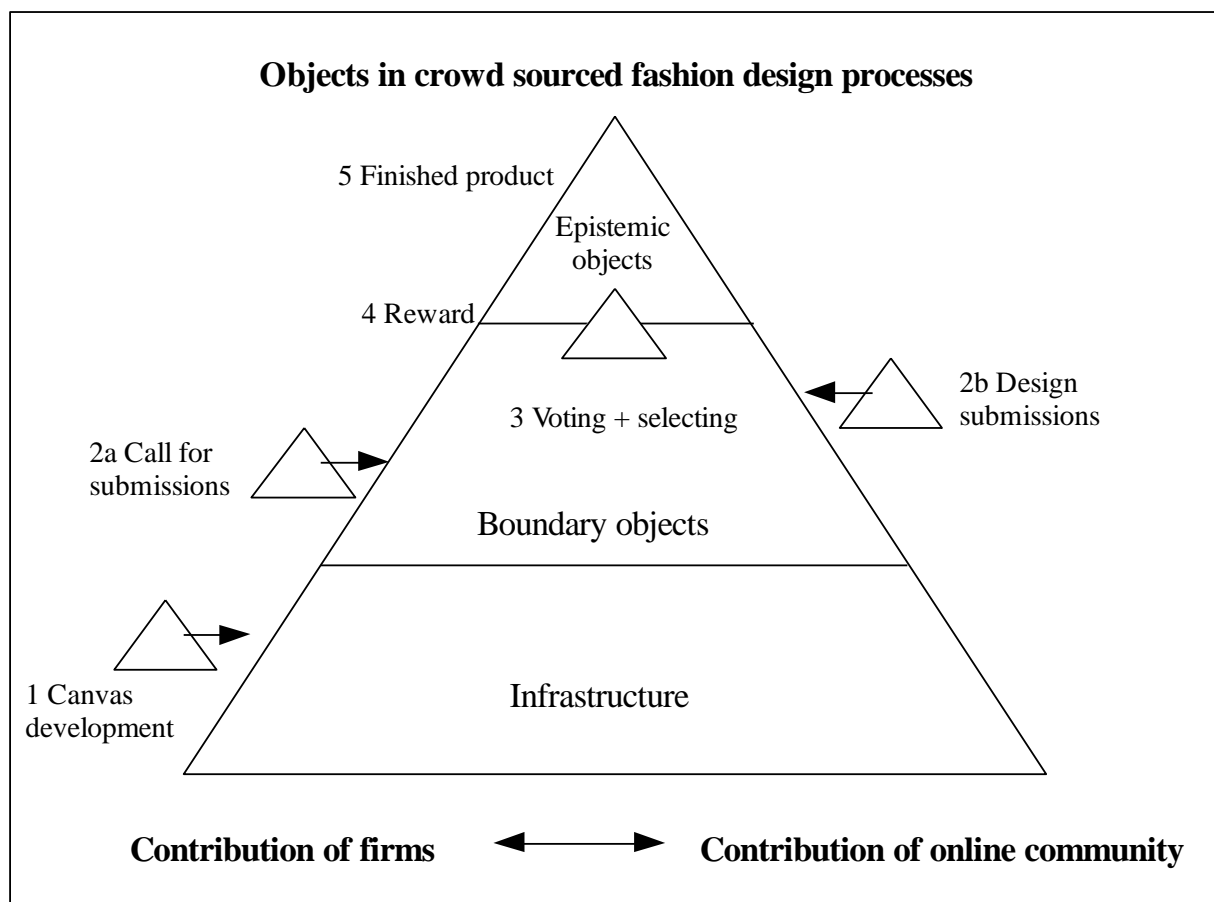
Collaborations in the fashion design cases show all three kinds of interdependency: sequential interdependency dominates in the linear process from idea generation to selling the product. Tasks such as canvas development are carried out solely in-house, followed by work on designs to be printed on a canvas that is completely outsourced to the online community. The voting phase resembles pooled interdependency: the review of submitted designs during voting and commenting plays a major role in determining winners. However, the aggregate wisdom of the crowd is not preferred to expert opinion as Brabham (2010) states, because final decisions are made by an in-house jury and exclude the crowd. Reciprocal interdependency, i.e. when two or more people work on creating something together, is still rare in crowd sourced fashion design, as opposed to open source software development. An example for reciprocal interdependence is the in-house canvas development at *Shortomatic*, where several experts work on making a functional prototype in a team.

### *Human-material interaction patterns*

In the process of companies collaborating with a crowd to design fashion items, we identify a repeating pattern of interaction that reflects the objects framework (Nicolini et al. 2012) and the

front and back stage interdependencies identified above: The white canvas is developed in-house, serving as infrastructure for graphic designs to the community. The call for submissions elaborated in-house uses boundary objects to communicate the conditions for submissions to the community. Submitted graphic designs that served as former epistemic objects produced by participants turn into boundary objects during voting and selecting. The firms reward designers with infrastructural objects, such as money as well as epistemic objects such as inclusion in a collection, as well as acknowledging and legitimating identity creation as it is mediated by boundary objects. What gets produced and sold is the outcome of the collaboration. Figure 8 illustrates the objects' hierarchy in the co-creation processes and the interaction between the firm and the online community.

**Figure 8: The objects in crowd sourced fashion design processes model**



The ‘objects in crowd sourced fashion design processes’ model shows how objects play a role in the interaction between the company and the online community. It demonstrates that until now most contributions and decisions are made by the firms and that by shifting activities from the left to the right, from the firm to the community, higher inclusion of the online community can be realized, motivating collaboration (Knorr Cetina 1997) and improving material outcomes. The model illustrates that high motivation and seamless coordination (Boudreau and Lakhani 2013) can be achieved by using objects as process and coordination facilitators. An awareness of object categories and front and back stage interdependencies helps companies to create cohesion in their online communities and motivate collaboration towards a material goal that unites the firm’s and participants’ objectives.

### **Practical implications**

Firms looking to draw on crowdsourcing for their product development should think about how to design each process identified in the paper. The cases illustrate three possibilities but there are various options offering more or less community participation and interdependency. Firms need to decide who they want to include in their online community and according to this specify infrastructural needs and boundary objects that allow the targeted group to work and communicate. We suggest that community members could be included on all three theoretical levels, e.g. including them in improving the infrastructure such as design programs, enabling participation in the creation of boundary objects like describing trends and providing a color palette, and giving them a role in elaborating epistemic objects such as seasonal fashion collections. In this way interdependency becomes reciprocal on a virtual scale, allowing true collaboration and frequent interaction to take place between members of the community and the firms.



## **Boundary conditions, limitations and opportunities for research**

Our findings apply to cases of crowd sourced fashion design in Europe and North America with a worldwide online community of submitters and buyers. Our study did not include the background of the community members and therefore cannot make statements about the effect of geographical, cultural, societal, or technological boundaries within the crowd. Data collection took place over the course of a year enabling us to observe how the firms in the cases grew and changed. A study with a longer time frame, ideally several years, could show the effect of progress in information and communication technology on crowd sourced fashion design, which at the moment is still in an early phase. Additionally, research of online co-creation of fashion by design experts, familiar with design software and knowledge of tailoring, would allow comparison of the submissions from a diverse crowd of amateurs with products made by an expert crowd.

## **CONCLUSION**

The results show that the combination of objects, theoretically, as infrastructure, boundary objects, and epistemic objects mediates collaborative practices and questions of identity in crowd sourced fashion design. Objects are present and active in every phase of the design process. They enable the crowd to participate, to understand what is being asked, to communicate and to be inspired to collaborate towards a common goal. Objects facilitate the to and fro that occurs among practices that the firm carries out that exclude the online community as well as those practices where participation, in the form of submitting, voting, and buying, is desired. The cases confirm that identity creation is a need that community members' want to fulfill (Bagozzi and Dholakia 2006). Boundary objects, in combination with the possibilities of

the Internet as an infrastructural object, provide the perfect (material) ground for accommodating this (immaterial) need. The method of multiple case studies was beneficial because it demonstrated that firms with very diverse clothing products, company structures, and long-term goals face similar challenges in providing the right objects to organize in-house workers and the crowd. The right mix of infrastructure, boundary objects, and epistemic objects gives organizations wishing include an online community of potential innovators in their product development the tools they need to manage their traditional, offline operations whilst pursuing the inclusion, participation and collaboration of a diverse international crowd.

## **5. Theoretical essay on the role of objects in collaborative practices: A final note**

### **Abstract**

This theoretical essay reviews the three empirical papers above with regard to their contributions to the objects and practice theory literature. The review reveals that objects, regardless of their theoretical category, facilitate collaborations when they have the following attributes: built-in flexibility, universality, acceptance, presence, physicality, availability, adaptability, visibility, and specificity. Our findings suggest that when experts engage in collaboration there is only an overlap of goals but not a common goal. This is mediated by the dynamic movement of objects and their built-in flexibility. The findings allow for the addition of a comprehensive object to the materiality literature: it is one that unites the properties of infrastructure, boundary objects, and epistemic objects and therefore caters for several needs of different participants. Its strong physical presence facilitates collaboration because it shows what people can use as input materials, it represents ideas that have to be communicated, and it represents the common goal that people are working towards. The concept of the comprehensive object constitutes the conceptual leap of the essay, because it spans the boundaries of the three tier hierarchy of objects (Nicolini et al. 2012).

**Keywords:** objects, collaboration, practice

## **Introduction**

The role of this concluding paper is to provide an interdisciplinary overview of how objects are used in collaborations with material outcomes. I pursue this objective by (1) reviewing the literature on objects and practice theory and (2) drawing from the findings of the three empirical studies conducted that employ these theories in different management contexts. The existing literature does not provide comprehensive guidance as to how objects can be used, and understood theoretically in terms of appropriate categories, to improve work processes in product development. This theoretical essay on the role of objects in collaborative practices fills that gap by extracting the processes and materials that are shared across practices. The synthesis of the insights of studies in strategy tool implementation, collaboration of experts and virtual co-creation reveals what properties objects need to have to facilitate communication and enable practitioners to reach their goals. The review emphasizes that by using material resources optimally and taking advantage of the knowledge of the theoretical (and practical) roles of infrastructure, boundary objects, and epistemic objects, professionals can use the dynamic that inhabits objects. The contribution synthesizes not only intermediary work objects and final outcomes but also immaterial goals, whether they are individual or shared.

The importance of objects in collaborative product development has been recognized by management theory and practice. As a result, a growing body of researchers has investigated the roles that objects take on in organizations. Nicolini et al. (2012) were the first to synthesize the research streams on objects in the paper “Understanding the role of objects in cross-disciplinary collaboration”, in which they took a step back from the ubiquitous concept of the boundary object and presented a framework that includes all object categories relevant to organizational research. The thesis built on Nicolini et al.’s (2012) paper by applying it empirically and adding our contributions. The following review integrates the existing

framework with insights gained from observing collaborative product development, to show how people work together in practice in relation to material objectives. The contribution to be presented follows Mintzberg's (2005, p. 370) ideas on combining insights from multiple events:

“It is rarely *the* insight that makes for an interesting theory. That usually comes from a weaving together of many insights, many creative leaps, most small, and perhaps a few big. It's all in the weaving.”

The concept of “weaving” is recurrent in this review as it represents a metaphor for what happens in this unification of theories and concepts. What one seeks is the conceptual leap, a punch line that enables people “to realize something that was previously unrealized, and comprehend something that was previously not comprehended” (Bate 1997, p. 1169). In what follows the contributions and frameworks used will be detached from their specific empirical contexts, following the notion that empirical research can be constrained by theory or it can be the impetus for theorizing, pushing the edges of theory (Feldman 2013).

The paper is in three parts. First, the literature on objects and practice theory is reviewed. Second the contributions of the empirical studies are reviewed to show what has been learnt overall and how it contributes to a conceptual leap. Third the limitations of the research and future possibilities are discussed.

### **The roles of objects and practice theory**

The objects literature involves three research streams, namely sociomateriality, boundary objects, and epistemic objects, including their various manifestations. This review emphasizes the importance of practice in the theoretical approach. To find out “how experts from various disciplines collaborate *in practice*” (Nicolini et al. 2012, p. 612, italics in original) the roles that objects perform (Orlikowski 2002) are included. For this purpose Nicolini et al. (2012, p. 624),

who synthesized research streams that theorize the roles of objects in organizations in an analytical framework combining boundary, epistemic, activity, and infrastructural objects, are drawn on. In their framework, Nicolini et al. (2012) call the ‘mundane’ things that provide infrastructural support “tertiary objects of collaboration”. The boundary objects that serve as work facilitators across different types of boundaries are “secondary objects of collaboration” and epistemic things and activity objects are “primary objects of collaboration”, objects which “trigger/sustain/motivate cross-disciplinary collaboration” (Nicolini et al. 2012, p. 625). According to the framework, material infrastructures constitute a rich ecology of supporting objects, whilst boundary objects act as translation and transformation devices, epistemic objects motivate cooperation and attachment, and activity objects hold together knowledge and trigger innovation. The framework helps us to gain a detailed understanding of the role of objects to be able to outline their current and potential functions in collaborations. Nicolini et al. (2012) point out that further research is necessary to explain how objects fulfill certain roles, change roles and what effects this has on collaborations. Additionally, previous research calls for better understanding of the active role performed by objects (Nicolini et al. 2012, Carlile 2004, Okhuysen and Bechky 2009, Orlikowski 2007). The practice perspective and emphasis on the role of material agency is made because, as Tsoukas (2010, p. 47) states, “research has focused too strongly on managerial agency at the expense of other actors.” Gherardi and Perrotta (2013, p. 231) emphasize the role of practice in a creative context: they define creative practices “in terms of a knowledgeable doing that gives form to the matter at hand.” The following review describes the object categories in detail, what they do, and what problems they solve.

#### *Infrastructural objects as material input*

Infrastructural objects, or objects of daily use, constitute those “boring objects” (Star 1999) that “combine to structure, anchor, and enable collaborative work” (Nicolini et al. 2012, p. 614).

According to Orlikowski (2007) the field of organization studies “has traditionally overlooked the ways in which organizing is bound up with the material forms and spaces through which humans act and interact” (p. 1435), stating that organizational practices are always connected to materiality. The recent stream of research on sociomateriality examines how materiality is part of everyday activities (Orlikowski and Scott 2008). Objects that perform the role of infrastructure are often used as bricolage, a term applied to the use of known resources in new ways (Cunha and Chia 2007, Levi-Strauss 1967). In many cases, the importance of these objects is only noticed when they are not available. Many of the challenges encountered in the empirical cases were of infrastructural and/or material nature, such as when more space on the table is needed, when there is no sharp pencil, or when a certain fabric is not available. Other examples of infrastructural objects constitute computer programs, phones, tables, and paper.

Sociomateriality seeks to “decenter the human subject” (Orlikowski, 2007, p. 1437) by including objects into research of organizational practices. Orlikowski and Scott (2008) emphasize that the notion of performativity is a central idea in sociomateriality (Barad 2003). Organizational practices are always connected to materiality and Orlikowski (2007) includes material objects in human interactions. Performativity occurs when people in organizations use objects in their interactions and these objects are ascribed a performative role (Orlikowski and Scott 2008): think of PowerPoint presentations. Objects are active rather than static because they mediate relations and the processes of interactions. They are performative because they can be “actively and materially constructed (‘performed’)” (Orlikowski and Scott 2008, p. 461).

#### *Boundary objects as communication facilitators*

Boundary objects are material things that allow their users to communicate across boundaries. Star and Griesemer (1989) first introduced the concept in a paper on coordinating the opening of a museum. To found the Museum of Vertebrate Zoology at the University of California,

Berkeley, people with different backgrounds had to work together: specialists such as biologists and museum administrators, as well as involved amateurs. Boundary objects can have different meanings for participants, allow heterogeneity and cooperation to coexist, and have interpretive flexibility (Star and Griesemer 1989). They provide structure for informatic and work process needs. As boundary objects are dynamic between ill-structured and tailored uses, different groups can work together without consensus, using ‘organic infrastructures’ (Star and Griesemer 1989). They are the ‘stuff of action’ that resides in the interstices of social worlds that can, therefore, be vague but useful (Star and Griesemer 1989). Star and Griesemer (1989) give a list of four kinds of things that can function as boundary objects: repositories, ideal type things, coincident boundaries and standardized forms. Because of their ‘interpretive flexibility’ boundary objects are tools that facilitate knowledge sharing across functional boundaries (Carlile 2002). In our cases things like timetables, drawings and prototypes functioned as boundary objects around which conversations took place.

Carlile (2002) has taken the sociological concept of boundary objects into an engineering context and the management literature. He shows how boundary objects can facilitate knowledge sharing across functional boundaries. Carlile (2002) explains how the right kind of prototype allows people from different departments to communicate and align their needs. According to Carlile (2002, p. 442), boundary objects can be “described as a means of representing, learning about, and transforming knowledge” in innovation and product development, something particularly relevant at occupational boundaries where “each profession has its own language, terminology, beliefs about relative importance of performance attributes, approaches to learning, mechanisms for information exchange, goals, and reward structure” (Edmondson and Nembhard 2009, p. 128; see also Dougherty 1992; Lawrence and Lorsch 1967).



Edmondson (2012a, p. 210) acknowledges the relevance of boundary objects as tangible representations of knowledge: “Research has shown that the challenge of occupational boundary spanning can be mitigated through the use of what are called boundary objects around which diverse groups can coalesce.” Whereas previous literature has identified the ability of boundary objects in making tacit knowledge explicit across functional boundaries, the present research looked at their capacity to enable communication around the “vague, if ambitious, goals that require experimentation, trial, and error, and collective brainstorming” (Edmondson 2012a, p. 35) that are characteristic to new product development in design, engineering, and science.

In the process of collaborating to achieve shared goals, epistemic things (Rheinberger 1997) fulfill the function of motivating the creation of something that does not yet exist, developing something that has not reached its final form, inspiring and materializing thought. Epistemic things (Rheinberger 1997) embody what one does not yet know. As objects of enquiry and pursuit they are characterized by lack and incompleteness (Ewenstein and Whyte 2009). Such objects of expertise can have the function of triggering and driving a creation process (Knorr Cetina 1997). Knorr Cetina (1997) explains that objects take on a binding capacity and integrate regimes of expertise, offering valuable insight into how we should approach the relationship of expert workers with objects: “I suggest that we can theorize experts’ relationships to objects more through the *notion of lack, and a corresponding notion of wanting*, than through positive ties and fulfillment” (Italics in original, p. 13).

Epistemic objects are always changing when they are being materially defined. When experts collaborate to innovate, their wants are directed towards a material object, often expressed as an intermediate representation. The material definition processes and changing nature of objects should be emphasized: “The defining characteristic of this kind of object, from a theoretical

point of view, is its changing or unfolding character – or its lack of ‘object-ivity’ and completeness of being, and its non-identity with itself” (Knorr Cetina 1997, p. 15). Examples of such material instantiations are “test materials, visual displays, maps, prototypes, substances, etc.” (Knorr Cetina 1997, p. 25) These intermediary objects play an integrating role in collaborations because they materialize the current state of what experts are working towards and have not reached yet.

Activity objects act as organizers and motivators around which the community revolves/evolves: “Collective action is inherently object oriented and the pursuit of some kind of object(ive) is what motivates collaborative work” (Nicolini et al. 2012, p. 614; Miettinen und Virkunen 2005). The activity object is by definition emergent, fragmented, and contradictory: “Collaborative action is thus maintained around the pursuit of a partially shared, partially fragmented, and partially disputed object” (Nicolini et al. 2012, p. 614; Miettinen und Virkunen 2005). Examples of activity objects are the objectives or the final products of collaborations, such as new technologies. “Collaboration is a way of working with colleagues that is characterized by cooperation [...] and shared goals.” (Edmondson 2012a, p. 54) The objective, or goal, of collaborations in product development is an object that is reached when the team decides that the final product meets the specified criteria. Epistemic things have an open-ended nature and an emotional holding power that creates attachment.

### *The practice aspect of the theory*

In this review greater emphasis is placed on practice theory than in the empirical papers because, after having looked at “what people do, what they talk about, and what they handle while talking” (Nicolini 2012, p. 53), the important thing was to find the theory behind the doings, sayings, and handlings of tools. Whereas Glaser and Strauss (1967), in applying grounded theory, generated concepts that were abstracted from time, place and people and

therefore had an “enduring grab” (Klag and Langley 2013, p. 150), the intention here is to join those qualitative researchers that “generate ‘substantive theories’ that apply to particular activity domains” (idem, Eisenhardt 1989, Glaser and Strauss 1967). In other words, we address instances that are relevant *because* they are specific to time and space:

“Practices are inherently contingent, materially mediated, and cannot be understood without reference to a specific place, time, and concrete historical ‘context’. Practices constitute the horizon within which all discursive and material actions are made possible and acquire meaning. Practice comes first: human agents’ capability always results from taking part in one or more socio-material practices.” (Nicolini 2013)

The practice turn is pre-eminent in much recent work, spurred in part, by Schatzki et al. (2001, p. 2) for whom “practices are embodied, materially mediated arrays of human activity centrally organized around shared practical understandings.” Giddens (1984, p. 2) emphasizes the importance of practice to theory building: “The core subject of the social sciences is neither the experience of the individual actor, nor the existence of any form of social totality, but social practices ordered across space and time.” Again, the quote highlights the conflict that the concepts of space and time cause to researchers wanting to generate theory from practice, applying practice theory. Pantzar (2013) explains the time/space issue:

“Practices like sleeping, cooking or joking represent recognizable, relatively enduring entities. By a practice we mean a type of behaving and understanding that appears at different locales and at different points of time and is carried out by different bodies/minds. Practices exist as sets of norms, conventions, ways of doing, know-how and requisite material arrays. They

figure as something that actual and potential practitioners can either participate in or withdraw from.”

Schatzki (2006, p. 1864) states: “That an organization is a bundle of practices and arrangements thus implies that an organization consists of interrelated practices transpiring amid interconnected material orders.” He emphasizes the notion of bundles of practices, and the role of spatial arrangements and material elements of practice (Klag and Langley 2013). Jarzabkowski and Spee (2009, p. 82) explain the notion of a bundle of practices: “Practices are a complex bundle involving social, material and embodied ways of doing that are interrelated and not always articulated or conscious to the actor involved in doing.” Pantzar (2013) adds “Practice integrations which are based on shared location are called practice bundles.”

#### *The role of objects in practice theory*

Objects matter in practice studies: A practice orientation means that we are interested in a chain of reactions where skills, symbols and material objects meet and form a reproductive cycle, i.e. establish a practice (Pantzar 2013). In this way performing a practice is an act of integration: “A practice (as enduring entity) is the outcome of continuous integration of symbols/images, material and competence/procedure.” (Pantzar 2013) In practice theory, knowledge is “always a way of knowing shared with others, a set of practical methods acquired through learning, inscribed in objects, embodied, and only partially articulated in discourse” (Nicolini 2012, p. 5).

Studies on practices can be oriented towards tools and artifacts, as in the empirical papers in this thesis, in connection with sayings and doings:

“Looking at the social as transpiring amid and through a nexus of interconnected practices. Practices are understood (roughly) as the mediated

object-oriented performance of an organized set of sayings and doings when such performance has a history, a social constituency and hence a perceivable normative dimension.” (Nicolini 2013)

The practice-based approach allows one to see and look for intended vs. emergent objects of the practice, different time horizons and what these reveal as contradictions between elements of practice and their accumulation (Nicolini 2013). The challenges of a practice-based approach are in the conceptualization of the performativity of objects and the knotting together of practices (weaving) (Nicolini 2013). Whalen (2013) addresses the role of technology in practice when he states that “studies of the social life of technology must consider not only the material objects but the collage of activities involved in making technology into an instrument that is incorporated into a weave of working tasks.” Here the concept of “weaving” is re-found. Reckwitz (2002, p. 250) describes what is involved in this net of practices, practitioners, and praxis:

“The existence of a practice depends upon the specific inter-connectedness of many elements - forms of bodily activities, mental activities, things and their use, background knowledge in the form of understanding, know-how and notions of competence, states of emotion and motivational knowledge.”

Orlikowski (2007, p. 1436) notes that in many studies of practice there is an “absence of any considered treatment or theorizing of the material artifacts, bodies, arrangements, and infrastructures through which practices are performed.” In her view, practices are always (socio-) material because they cannot be separated from the artifacts that are necessarily involved. Feldman (2013) defines performativity as specific actions taken by specific people in specific times and places. Artifacts are important because things like models, rules, equipment,

forms, and physical contexts influence and are influenced by performativity (Feldman 2013).

Pantzar (2013) adds to the notion of performance/performativity:

“Practices are constituted through performance, which in our terminology means integrations of symbols, material and procedures. On one side of the coin, practitioners are 'captured' by practices that make demands on those who do them. On the other side of the coin, practices are constituted through participation and defined by the activities of those who 'do' them. For example: drinking coffee.”

This review of the literature on objects and practice highlights the interconnectedness between the topics and what can be gained by combining the theoretical knowledge with insights derived from empirical studies.

## **Method**

The setting: The empirical studies were carried out in the fashion industry: the field sites consisted of a traditional fashion brand producing a seasonal collection for a runway show and three design firms which co-created fashion items with an online community. Fashion designers innovate at a rapid pace: whereas areas like science and technology innovate incrementally and often take years from having an idea to developing and launching a product, in fashion the prescribed pace for this process is six months at the most. The research conducted ranges from strategy implementation to ad-hoc team building with outside experts to online co-creation with a worldwide virtual community.

The approach: The literature reviewed locates the current state of the roles of objects in collaborations. To place the review in the wider theory context practice theory has been included to help the reader understand why and how the research is relevant. The method used

was ethnography: the case for the first two papers was a traditional field site, where note taking was enriched with visual data to document the development process. The third paper moved into newer realms for analysis as a virtual ethnography of three cases that involve a worldwide online community to co-create design objects. That data collection was enhanced with face-to-face interviews.

The analysis: After the “disciplined pursuit and analysis of data” (Golden-Biddle and Locke 1993, p. 604) in the empirical papers, a step back was made to see what more there was to the results. A re-analysis assessed the commonalities and differences and what one could learn from splitting the cases into their processes to reveal further elements in the data. The downside of a focus on visual data and observed practices became evident: only “what is in sight counts” (Nicolini 2013), resulting in a limitation to “the narrow context of the observable” (Nassehi 2006, p. 459). Therefore researchers must follow practices in space and time, to be able to represent their trans-situated-ness. Such “following” is facilitated by disciplined bodies, mediational tools that actively operate on the scene and discourses in their different forms that lead to other sites and practices, over time (Nicolini 2013).

In the analysis of the papers, ‘abductive reasoning’, i.e. a cognitive logic of discovery (Reichertz 2007), was used. According to Peirce (1958) abduction is appropriate for discovery-oriented research such as ethnography (Agar 2010, Locke et al. 2008, Van Maanen et al. 2007). Abductive reasoning constitutes a process where ongoing observations lead to an idea, surprise, or doubt (Alvesson and Kärreman 2007, Locke et al. 2008, Reichertz 2007). In a combination of induction and deduction we then derive an alternative explanation (Klag and Langley 2013), resulting in the conceptual leap.

## **Results from the three papers**

The cases that form the foundation for this theoretical chapter involve three kinds of collaboration: within the team, with outside experts, and with a community of online users. We identify the following processes in collaborative practices: at any stage in a collaboration towards a material outcome, ideas need to be represented visually. Whereas talk and text serve as inspirations and articulations, they are limited in what they can provide in comparison to objects. At every stage of the collaboration, input materials, boundary objects and epistemic objects are defined, decided on, and re-defined, until the collaborators reach the final product. In this, objects move from being epistemic objects to becoming infrastructure as the development progresses. Boundary objects are created and dismissed. Our results ascertain that collaborative practices are comprised of a hierarchy of objects that is in constant flux, representing the movement described above. Each of our studies provide empirical evidence of this dynamic and explain the roles of objects in the specific contexts.

### *Results for theory*

The papers show that an effective use of objects may facilitate communication, reduce the need for coordination and enable the collaboration of experts and amateurs, closed teams and open communities towards shared and individual goals, because they replace control with creativity. The diffusion potential of this paper exists on an academic as well as a practical scale. The contributions of the individual papers can be summarized as follows:

1. Applying knowledge of objects as infrastructure, boundary objects, and epistemic objects to strategy implementation shows how materiality can be used to overcome the theory – practice gap, by providing a dynamic model where constant exchanges between theory and practice, making and implementing, strategy tools and the objects of daily



work take place. Nicolini et al.'s (2012) framework and the model resulting from our case explain how a more differentiated use of strategy tools as objects allows creative professionals to overcome the separation between management and creativity and how the connected goals can be united. This can occur when the strategy tools, the strategy implementations tools, and the product targets are aligned and reinforced as primary objects with a visual/material presence.

2. The need for leadership and coordination decreases when the appropriate objects passively fulfill these functions in the process of developing a seasonal fashion collection. The results show that objects mediate collaborations where the participants pursue individual objectives that contribute towards reaching an overall goal. Professionals are motivated to work on creating epistemic objects and their work phases are interconnected in the infrastructure and boundary objects they use and share to arrive at the common objective. After having found out that shared goals are never completely shared, we use our findings to show how “not completely shared”-goals can still have the cohesive force of epistemic objects to be used to motivate the collaboration of experts. We derive a model from our results that illustrates how a comprehensive framework of theories concerning objects (Nicolini et al. 2012) can be used to design the processes of a short term collaboration of experts more effectively and reduce the need for congruent goals by replacing them with a net of interwoven individual goals spanned by a shared common goal. The result of this is an even lower need for coordination and agreement, facilitating collaboration, leading to better overall results for everyone involved.
3. In an online co-creation of fashion the firms face the challenge of attracting a diverse crowd that is united by an interest in fashion, art, and design. The companies combine the tasks of a classic enterprise with the features of an online community. The results

show that objects fulfill the roles of all three theoretical categories (Nicolini et al. 2012) in every phase of developing a crowd sourced fashion item, from the idea to the final product. Objects enable firms to go back and forth between in-house offline collaboration and co-creation with a worldwide online community. The discussion describes how objects are used to overcome the challenge of identity and product separation, how objects mediate interactions between the firm and the community, and how an effective use of objects facilitates collaboration processes.

The papers discuss the role of material objects in creative work, but the lessons apply to other contexts, because creativity becomes ever more important for firms' competitive advantage (George 2007). The lessons from the analysis of creative professionals should therefore be useful for those interested in traditional industries.

### *Results for managers*

The study offers industry practitioners valuable insights into their practice, the role of the objects they use and where there is space for improvement, therefore helping them to reach their strategic goals. The results specify which objects motivate attaining strategic goals, which objects are needed to enable the communication of participants and which input and infrastructural needs have to be met so that the collaborators are able to arrive at the strategic targets. Examples like the ideas panel, a board displaying the current state of the clothing collection and the ideas inspiring them, on the studio wall, show how creative professionals introduce simple artifacts that are dynamic rather than static. When the targets that team members are working towards are expressed materially, their presence streamlines collaboration towards them. Doing this not only aids workers of creative industries but shows how leaders from any field can motivate professionals to work towards shared goals by

representing their needs materially, communicating through things, visualizing objectives, and making targets specific and directly tied to what people are working on at that moment.

Managers of traditional industries can ask their teams to develop and discuss ideas using objects which resemble the three levels of the hierarchy, i.e. divide them into infrastructural needs, communication tools, and material outcomes which drive the collaboration. Doing this forces members to define exactly what they have, what they need, where they want to arrive at, where boundaries need to be overcome and how to do so. The papers create awareness that an optimal use of objects is as important as talk and text in the communication of stable team members as well as short-term contributors of expertise. The active use of this knowledge can enable managers to motivate team members, allow them to work more independently, instill a higher degree of within-team and outside control, as well as reach a desired outcome in less time with fewer resources.

### **Discussion: The conceptual leap**

In this discussion we present our contribution from a synthesis of the frameworks derived from the three empirical papers. The gap between theory and data is meta-bridged by including previous contributions to the literature to see what has been gained overall. The conceptual leap is defined as a “consciously realized and abstract theoretical idea in an empirical study that may or may not make its way to a theoretical contribution in its final form.” (Klag and Langley 2013, p. 150) The conceptual framework involves ‘seeing and articulating’ (Richardson 1994, Van Maanen 1988), where

“‘seeing’ implies uncovering new ways of making sense of some aspect of existing social worlds. ‘Articulating’ implies representing this new understanding, either privately to oneself through writing or visualization, or

publicly as one attempts effectively to communicate new insights in discussions, publications or presentations.” (Klag and Langley 2013, p. 150)

The duality of seeing and articulating is reflected in analyzing and writing which are often described as separate but are in fact closely related (Van Maanen 1988), especially when considering the generative power of writing (Huff 1999).

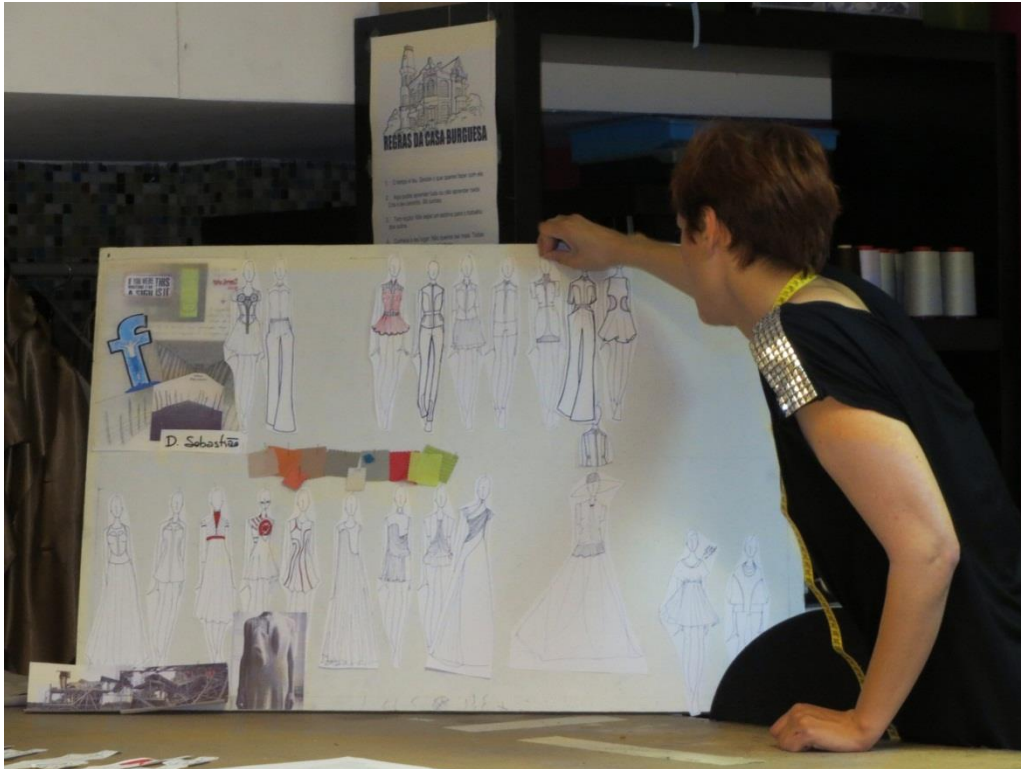
The overall results demonstrate a world of everyday empirical conflict between current and desired states as the normal context of creative work. In the agreement reaching processes that take place to resolve this conflict, objects are involved. Objects, regardless of their theoretical category, facilitate collaborations when they have the following attributes: built-in flexibility, universality, acceptance, presence, physicality, availability, adaptability, visibility, and specificity. Objects are then able to accommodate the needs of different people and professions, at different times and places, when they are doing different things, i.e. carrying out their practices.

The cases show that tasks are pre-defined by professionals’ expertise: people are guided by their functions. They carry out the same practices independent of other factors such as time, space, and even collaborators. What shapes and differentiates their doing is the material they are working with, towards, and communicating through. The process of input becoming output through communication (in material form) repeats itself in every step of product development. The process looks the same when looked at from the beginning to the end and in it is micro-phases.

These derivations lead to the introduction of a new concept, that of a comprehensive object: It unites the three object categories, such as the ideas panel that integrates and visualizes input

materials, boundary objects, and represents epistemic objects. An example of a comprehensive objects is the ideas panel on Image 12.

**Image 12: The ideas panel as an example of a comprehensive object**



The ideas panel represents the stage that the collection is at and where it wants to go, plus the inspiration and input materials such as fabrics. The participants share ideas and the result is displayed on the panel.

In practice such comprehensive objects guide the making and choosing of the other sub-categories of objects. A movement of objects in the hierarchy of objects was observed, mostly downwards from being an epistemic object to becoming infrastructure. Boundary objects usually remain as such until they become obsolete. Additionally objects change their roles dynamically according to which expert uses them, what the expert's sub-target is, and at which

state the collaboration is at. Object categories are not static but continuously redefined. The objects with a built-in flexibility are likely to move more between categories than simple artifacts.

Collaboration works best when the members of the temporary or stable teams are able to pursue their own as well as the organization's goals (O'Mahony and Bechky 2008). This limits the extent to which shared goals (Edmondson 2012a) have to be common to all collaborators. Our findings suggest that when experts engage in collaboration there is only an overlap of goals but not a common goal. The absence of a common goal is not the handicap or the functional hole that the managerialist literature assumes. In practice, everybody's input materials, communication means, and objectives are virtually connected to everyone else's work. The collaboration through objects builds a spiral that cumulates in the common goal they are collaborating towards and includes individual goals. The single steps that experts take in their field remain separate, but their work phases are interconnected in the infrastructure and boundary objects they use and share to arrive at the common objective. The objects help to create cohesion and motivate collaboration towards a material goal that unites participants' and the organization's objectives. What we arrive at with this concept of an existing objects framework, the added comprehensive objects, and the conclusion that collaboration practices are a net of interwoven individual goals spanned by a shared common goal is an iteration of the concept of weaving discussed in the literature.

### **Conclusion: future research**

In this review the importance of differentiating the roles of objects according to their theoretical categories of infrastructure, boundary objects, and epistemic objects is reinforced, and the concept of the comprehensive object that spans the boundary between the previous three has been developed. Applying Nicolini et al.'s (2012) framework in the context of collaborative

product development has shown us that (1) objects change roles dynamically according to who is using them for what and when and that (2) final outcomes are not the common goals of collaborations but consist of an interwoven net of many individual sub-target of participants. Just like objectives are not shared, places, time, and practices are not completely shared, therefore what unites the doing is the material objects that mediate the collaboration and manifest what has been done and what needs to be done. The comprehensive object is identified as one that guides the practitioners during the intermediated stages of their work because it resembles input materials, communication objects, and represents the outcome that people are working towards. An organization's capability to employ objects is crucial to its success because when people are working towards creating a new product, the material intermediate manifestations, the input materials, and the quality of communication are what decide the result.

Although the objects involved in collaborative practices are identified and a comprehensive picture of them provided, the specific roles of bodies, time, and space were beyond the scope of the thesis. However, their importance in collaborations and material practices should be acknowledged. The findings presented herein are feasible and their application can be seen in any context in which people collaborate towards achieving material outcomes. The findings show that collaboration processes repeat themselves and that practices are sustained throughout different contexts. For future research we suggest further investigation of the theoretical roles of objects in practice generally and collaborations specifically, to advance our knowledge and understanding of this interwoven net of objects and practices.

The whole is greater than its parts: Only when people, language, and materials come together, ideas can turn into new products. It is the combination of the material with the immaterial, and the mix of people with different backgrounds and goals that enables creation and innovation to flow. This thesis emphasizes the role of material objects—things that we use, communicate

through, and make at work—and the ways in which people interact with and around these objects. The research has shown that talk, text, and things are equally important to allow creativity to materialize. Matter obviously matters, and the micro-processes of how matter matters in creative collaborations are described in the text, tables, figures, and images above.



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